The Only Journal With a Paid Circulation in the Rock Products Industry

Rock Products

Established 1902

VOLUME XXVII, No. 2 CHICAGO JANUARY 26, 1924

Nine Reasons Why James Stanton & Son Chose Plymouths

James Stanton & Son, of Leavenworth, Kansas, are big, progressive contractors of the middle west.

They have used Gasoline Locomotives of various makes for highway construction for a number of years. Then a Plymouth 7-ton 4-speed Gear Drive Gasoline Locomotive was placed on their rails. After a thorough trial it was accepted and repeat orders for three more Plymouths followed. Now Plymouth Locomotives take care of their entire haulage.

Mr. Stanton states his decision in favor of the Plymouth was based on Nine Points of Superiority, which are set forth in adjoining panel. It will pay you to read Mr. Stanton's letter, as it comes from the man who bought, used and knows. Ask for literature.

The Fate-Root-Heath Company
210 Riggs Ave., Plymouth, Ohio

This Letter Tells Why

JAMES STANTON & SON
Leavenworth, Kans.

The Fate-Root-Heath Co.,
Plymouth, Ohio.

Gentlemen:—Following are nine points of superiority on which I based my decision in buying Plymouth Gasoline Locomotives:

1—Extra large driving wheels.
2—Location and convenience of control levers.
3—Only two driving chains to maintain.
4—Enormous brake leverage, fool proof, permitting greater speed with higher safety factor.
5—Unit parts enclosed, eliminating all dust and dirt in working mechanism.
6—Convenient location of sand boxes for filling; hot air draft from engine keeps sand warm and dry, insuring positive sand action.
7—Transmission gears extremely heavy; contractor can be sure of no trouble developing from this point.
8—All parts very accessible for making any adjustments that might be necessary.
9—Power plant designed to give greatest horse power with real economy, proven by actual test.

I am glad to say the performance of the Plymouths has fully justified my judgment.

Very truly yours,
JAMES STANTON & SON,
(Signed) James Stanton, Jr.

PLYMOUTH
Gasoline Locomotives

PUBLISHED BY THE TRADEPRESS PUBLISHING CORPORATION, Inc.
MEMBER AUDIT BUREAU OF CIRCULATIONS MEMBER ASSOCIATED BUSINESS PAPERS

Crusher house (above) which houses "Mammoth" crusher at Monolith Portland Cement Co., Monolith, Calif. Also photo of their "Mammoth" crusher.

Monolith Portland Cement Co., Installs a "Mammoth" Crusher

"Mammoth crusher saved $20,000 in first cost and $4200 yearly. Takes 36" cube stones and reduced it to 1½" and finer with a minimum of fines as we sell our limestone for macadam purposes."

John Herzog & Son, Forest, Ohio

"The rock as it comes from our quarry runs from 36" cubes to spalls and we crush from 60 to 75 tons per hour. Seventy-five per cent of the rock is crushed to powder and 25 per cent to 1¼" and smaller."

San Antonio Portland Cement Co., San Antonio, Texas

CONSIDERING that first cost is usually 50 per cent less and crushing costs also reduced (one plant reports a 53 per cent reduction) it is easy to see why many prominent firms are installing "Mammoth" crushers. One of the latest is that of the modern Monolith Portland Cement Co., Monolith, Calif.

To Crush 36" Rock to ¾"

Their "Mammoth" crusher is to reduce rock as large as 36" cubes to ¾" at the rate of 175 to 200 tons per hour, and will do the same work in one operation as a primary breaker, recrushers and accompanying elevators, conveyors, drives, etc. By reducing the stone to ¾" and finer, the product of the "Mammoth" can be handled by Compeb or similar type fine grinders. This means only two operations in preparing the raw material.

Tell Us What You Have to Crush

"Mammoth" crushers are by no means confined to cement plant work, as a number are in successful operation reducing rock for macadam, fluxing and kiln stone, and the finished product is very uniform with an unusually small percentage of "fines." If you have material to crush or pulverize write for data on the proper Williams type for the purpose.

Williams Patent Crusher & Pulverizer Co.
800 St. Louis Ave., St. Louis, Mo.

Chicago, 37 W. Van Buren St. — New York, 15 Park Row — San Francisco, 67 Second St.

WILLIAMS PATENT CRUSHER & PULVERIZER CO. ST. LOUIS MO. U.S.A. TRADE MARK

Williams

PATENT CRUSHERS GRINDERS SHREDDERS

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Rock Products

Volume XXVII | Chicago, January 26, 1924 | Number 2

The Green River Sand Pit

A Wyoming Plant, Far from Large City Markets, which Is Thoroughly Modern in Equipment and Operation—Produces Ice in Winter

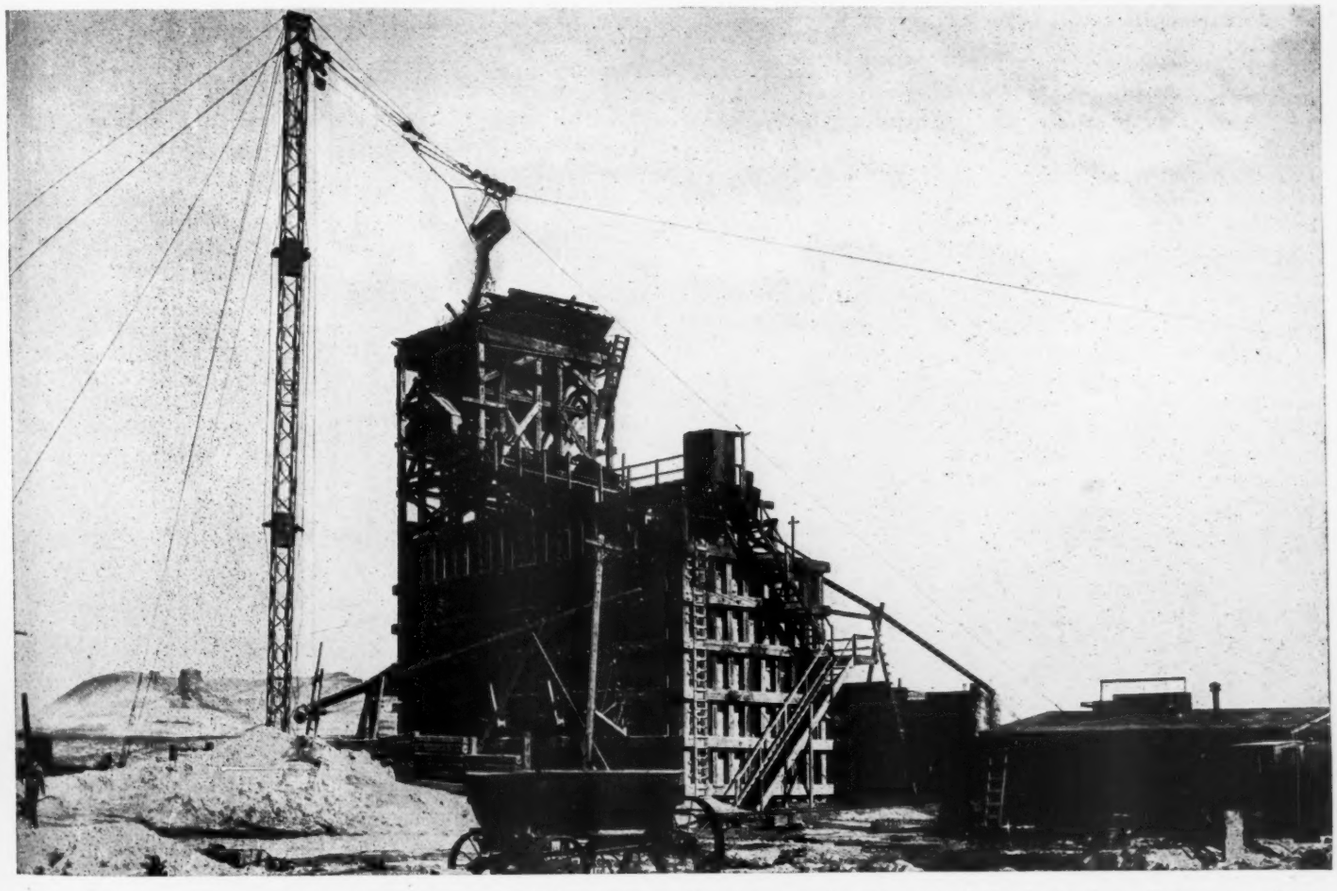
By J. E. Irvine
Owner and Operator of Green River Sand Pit

THE Green River Sand Pit, owned and operated by the writer, is the only one along the Union Pacific railroad in Wyoming, with a complete modern washing and screening system. It is located half a mile from the city of Green River, which is the division headquarters for the Union Pacific Railroad Co.

Green River, being located on the western slope of the Rocky mountains, has an altitude 6080 ft. above sea level. Our season for loading is not so long as some of the plants located in the East and South have, as the frost is not out of the ground until March 15, and the cold weather shuts us down about December 1. Our short season is overcome in such a way that there is no trouble in keeping the regular employes the year 'round in steady work, as we cut about 10,000 tons of ice during the winter months, from the main channel of the Green river, along where sand and gravel are dug during the summer months.

The larger part of this ice harvest is sold to the Pacific Fruit Express Co., for icing fruit trains in transit.

The deposit covers about 17 acres of a washed bar along the main channel of the Green river which washes down the sand and gravel during the high water season in



The steel mast and well-designed and constructed bins and washing plant make this one of the best of small tonnage plants

The deposit is renewed each year by the high waters of late winter and spring. It shows no depletion after 17 years of shipping

the early summer months of each year, making the pit practically inexhaustible. I have been loading sand and gravel from this pit for the past 17 years and there still remains as much as when I started 17 years ago.

The bar averages about 55 per cent good silica sand, nearly white in color, and 45 per cent gravel, from pea gravel up to a few cobbles as large as 6 in. in diameter, and the material is about 11 ft. deep. Below the sand is a smooth bed of rock, so that no earth or other foreign matter is encountered in digging the sand and gravel.

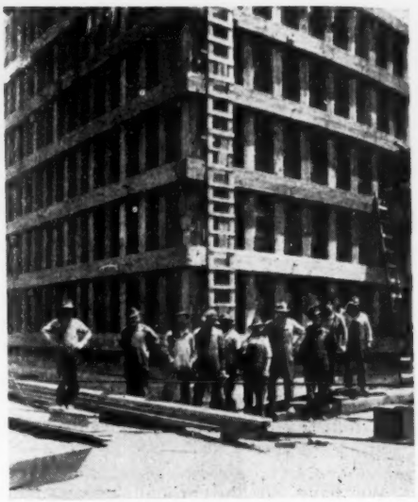
The material is taken from the river bed with a Sauermann cableway excavator, 800 ft. span, having a steel mast 125 ft. high, using 1½-yd. dragline bucket and operated by a Thomas electric hoist of the two-speed type with 100-hp. motor. It uses 440-v. current, which is purchased from the Green River Electric Light and Power Co., whose plant is only about 300 yd. away.

The material is dropped from the bucket into a hopper which is 72 ft. above the ground level. It is 26 ft. square at the top. From this it is fed to a scrubber of the Dull type, furnished by the Link-Belt Co., with a 24x24-in. rotating drum-wheel making 25 r.p.m. The hopper has six gate brackets with counter weights, so as to regulate the even feeding of the material to the scrubber and screens, also to allow a large rock to go through without breaking the side of the hopper.

From the scrubber the material is chuted into a set of three conical screens of the Dull type, the first 2-in. mesh, the second ⅞-in. mesh, and the third ¼-in. mesh for the sand. All the gravel that does not pass through the 2-in. mesh screen, goes to the oversize bin, where it passes through a gravity chute to a No. 4 Allis-Chalmers gyratory crusher, which sets on the ground level and is driven by a 25-hp. electric motor. From there it is picked up with a 62-ft. centers elevator of the continuous bucket type, the buckets being 10x10 in. in size and made of 10-gage iron, on a No. 823 Link-Belt steel chain. From this elevator the crushed material is passed into the scrubber by means of a chute, thence on to the screens, and from these it is dropped into the bins. At the lower end of the screens is situated a Dull conical automatic sand separator which is 72 in. in diameter.

The water supply is taken from a sump sunk about 50 ft. from the plant, right at the edge of the river bank, by a No. 4 centrifugal pump directly connected to a 25-hp. motor of 1800 speed, which furnishes 485 gal. per minute through a 5-in. pipe up to the bottom of the receiving hopper, which is 67 ft. above the pump. The pump was made by the Aurora Pump Co.

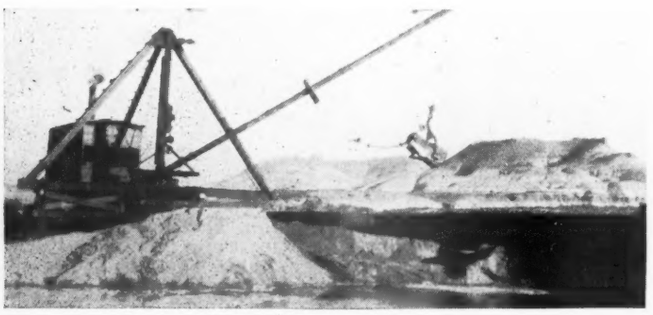
The bins rest on concrete foundations 30 in. wide, placed on a wide footing which rests on gravel, the same as that dug from the pit. The bins and washer buildings are constructed of 12x12-in. timbers, spaced 2 ft. and lined with 3-in. plank, 26x70 ft. over all, divided into four different bins. The bin for sand is 20x26 ft., for pea gravel 14 ft. wide, for coarse gravel is 18 ft. wide, and the oversize bin is 18 ft. wide, so that



Crew of Green River Sand Pit

there is ample storage for a whole day's digging in case of a car shortage. Each bin is equipped with a patented bin gate with swinging chute, supported with a counterbalance weight hung on a ⅜-in. cable. Wagons and trucks are loaded on one side of the building, and on the opposite side is a sidetrack belonging to the Union Pacific Railroad Co. for loading cars. This track has plenty of slope so that no power is required for moving the cars. The track is long enough to hold more than 30 cars at one time, so that there is not much delay on account of switching service.

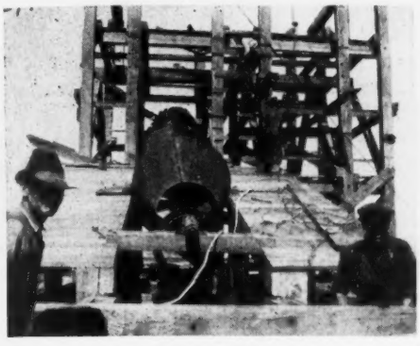
The most of the material from this pit is sold to the Union Pacific Railroad Co.,



Left: Original method of excavating which was abandoned when the washing plant was built. Right: Cutting ice in winter. The ice harvest keeps the crew employed after the sand plant has been shut down by cold weather

which uses it for locomotive sand, bedding sand in stock cars, and all kinds of concrete work and building purposes along the three railroad divisions in Wyoming and Utah as far west as Ogden, Utah. The coal camps of the different companies around Rock Springs and Kemmerer, use several hundred cars every year, and the cities of Rock Springs, Kemmerer and Rawlins purchase their sand and gravel for commercial use from the Green River Sand Pit.

There has been a great demand for sand and gravel during the past season and we cannot keep up with the orders, with a capacity of only 9 or 10 cars a day. Work is now started to double the output for the next year by installing another complete unit throughout, except the bins which will be used for both plants.



The screening equipment being installed

We have on the ground now, another complete Sauerman cableway with 1½-yd. dragline bucket, with another 125-ft. steel mast, which will be operated by a Sauerman special-built steam hoist with two speeds on the front drum. This plant will be located 225 ft. north of the present cableway, and the material dug with the new plant will be dropped into a bin now being erected and taken from this bin by a 24-in. belt conveyor with a 13-deg. incline, which will be 238-ft. centers, furnished by the Weller Mfg. Co. of Chicago. It will be driven by a 20-hp. electric motor with silent chain drive, and supported by wooden structure on 12x12-in. timbers, spaced 55-ft. centers. The material will be fed into the scrubber and screens, there being a second scrubber and set of three screens installed, each set driven independent of the other by a 15-hp. electric motor, with silent chain drive enclosed in a steel housing; these, including chain drives and housing are furnished by the Link-Belt Co. of Chicago. There will also be installed another No. 4 Allis-Chalmers gyratory crusher, with another elevator of the same size and type, which will be driven off of the counter shaft of the screen drive. Each drive will have a twin cone clutch so that each can be thrown in or out of service without stopping the other. We will also install another pump of the same make which will be direct connected with a 25-hp. electric motor.

The equipment for the new plant is an exact duplicate of the present plant, except the new steam hoist, this being so that repair parts will fit either unit of the two plants, thus saving time and capital tied up in emergency repair parts.

Arrangements are made for storage bins across the track which will hold approximately 100 railroad cars of the two sizes of gravel. The material is taken across the track into the bins with overhead steel chutes from the bins under the screens, so that when these bins are full we do not have to wait for orders for any one certain kind of material, thus allowing the plant to keep right on running, the surplus going over into the storage bins. The material is taken from these bins by an inclined continuous bucket elevator, 26-ft. centers, and 18 ft. high, which is operated by a 5-hp. electric motor. The sand is flushed to storage through a 10-in. spiral steel pipe 90 ft. from the bin building into a pile along another railroad track. From this pile it is picked with a derrick having a 52-ft. boom with 1-yd. clamshell dipper, operated by a steam hoist, and loaded into the railroad cars as needed.

With the plant there is also a blacksmith and machine shop, fully equipped with power forge, drill, lathe, emery wheel, shear, punch and ox-welding and cutting torch, so that any repair work or overhauling is made right at the plant without any delay.

The plant is operated by a crew of five men, a hoist operator, a man who looks after the screens, a man who acts as oiler and looks after the crusher, and two laborers to clean out the railroad cars, inspect the dump doors on the cars and load them.

An average output is 8 to 10 cars per day of 8 hr.

All the chutes and water pans under the screens are lined with an extra piece of sheet steel so any time they wear down thin they can be replaced without replacing the entire chute or water pan. This avoids any leaks letting the dirty water drop into the material in the bins.

All the electric motors mentioned are enclosed in a storm-proof house, so that no sand or water can get into them. Each one is equipped with a standard starting box and automatic cut-out fuses.

Tenth Annual Purdue Road School

APPROXIMATELY 300 state road men attended the various sessions of the tenth annual Purdue road school, Lafayette, Ind. The chief address was by W. J. Titus, bridge engineer of the State Highway Commission, and was directed chiefly to commissioners, surveyors and superintendents of the counties, and emphasized that bridge and culverts should be designed to stand 20-ton traffic because the truck business is general in Indiana, and for the second reason that many important county roads are designed to be added to the state road system later.

Earl Crawford, president of the State Highway Commission, and Prof. W. K. Hatt, head of the School of Civil Engineering at Purdue University, were two of the speakers.

Prof. C. C. Albright, of Purdue University, presided at the opening meeting, and following an address of welcome by Dr. E. C. Elliott, president of Purdue, Professor Hatt made a short address on "Forecasting Highway Traffic." He said that when the country again gets back to normal business conditions, it is going to require a co-ordination of the work of the railroads and the motor companies to take care of the transportation problem.

Mr. Crawford explained the work of the highway commission and outlined the efforts that the state has made at compiling definite highway programs. This was taken up from 1821 to 1840 and then was dropped with the beginning of railroad transportation. The present motor age again brought up the question of highways.

The state commission now has control of 2 per cent of mileage of the state and reaches 50 per cent of the population. A definite program has been outlined for the next two years. One of the features of Mr. Crawford's talk was his recommendation for future building. He said that when traffic gets too heavy for the 40-foot highways we should build roads several miles distant on a parallel line with the original highway to divide the traffic and benefit more people.

Stephens-Adamson Builds Pacific Coast Plant

FOR several years the Stephens-Adamson Mfg. Co., with main offices and works at Aurora, Ill., have maintained sales engineering offices on the Pacific coast. The Western office was established to handle a volume of business which is available in the Western states.

Recently this company purchased a tract of land in Los Angeles as a site for a branch factory and assembly plant. Work on the building structure is now being carried on and the plant should be in actual operation within the next few months.

This plant will fabricate and assemble material handling machinery for the industries in the Western district. A staff of experienced designing engineers will serve customers in the preparation of designs for contemplated installations. This branch will also have erection engineers available to assist in the erection and installation of machinery equipment.

This new service will make it possible to secure "S-A" machinery, which is made in California and which will be carried in stock for prompt shipment.

The Pacific branch factory will be in charge of R. C. Pierce.

American Rock Crusher Plant

A Model Small-Tonnage Plant Near Kansas City, Kansas, with Design and Operation Particularly Planned for Local Delivery by Trucks

THE district around Kansas City is famous for the number of comparatively small-tonnage crushed rock operations it contains. This is partly due to the nature of the ledges that are quarried, which in many places are not extensive enough to justify a tonnage running into thousands of tons daily, and partly due to the fact that the quarries are situated in such well settled localities that heavy blasting is out of the question.

The plant of which pictures are shown on this and the succeeding page is one of the best in design and operation which is to be found in this locality. It is the plant of the American Rock Crusher Co., situated at Rosedale, Kans., a suburb of Kansas City, Kans.

The quarry works what is known as the Iola ledge, from which formation a considerable amount of the crushed stone which supplies the Kansas City market has been taken. The quarry face is 30 ft. high. As so many houses are near the quarry, it is impossible to set off "big shots" in the ordinary way, and only two holes are shot at a time. It has been found that this eliminates the chance that any house in the vicinity would be damaged by the force of the explosion.

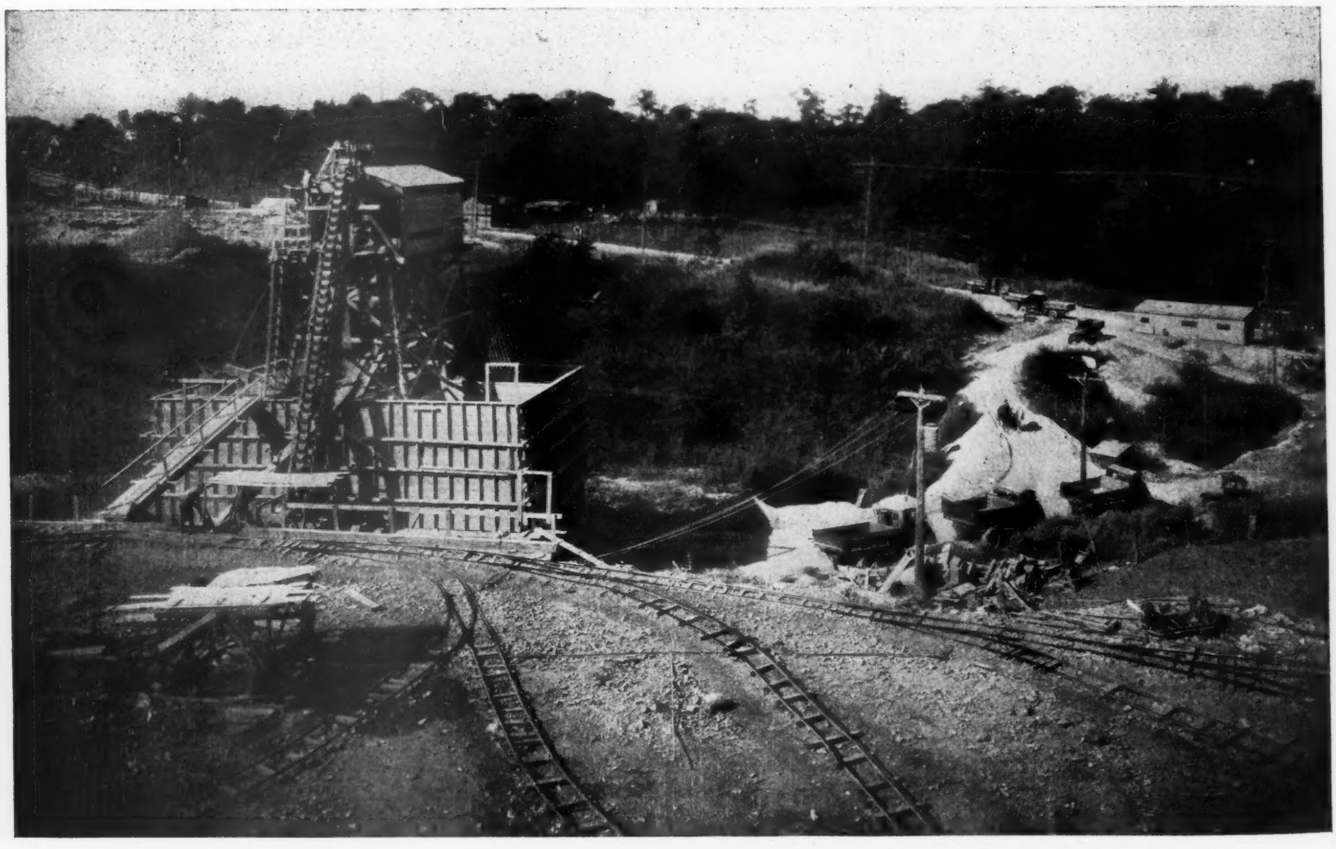
The quarry produces about 400 yd. daily, all of which is delivered by truck to the two Kansas cities. There is a strong demand in these places for crushed stone for concrete aggregate, and there is no competition from gravel in highway and similar work because there are practically no deposits of gravel in this section. The rock is a hard limestone that makes excellent aggregate and road building material.

Compressed air is used for drilling. The compressor is driven by electric power, as is all the other machinery about the plant. The quarry floor is kept neat and clean, the trackage is conveniently laid, and everything about the plant is kept "shipshape." Although the operation is not large, as compared with the 4000-ton, and even 6000-ton, plants that are getting common, the care and skill that are shown in the operation might well be copied by plants of a much larger tonnage.

The quarried rock is brought into the plant by side dump cars, which empty directly to the crusher. From this it goes to an elevator of the continuous bucket type that takes it to the scalping and resizing screens. These screens are set high enough to spout the material to any bin required from any part of the screen.

This type of plant, with the bins in a block and the high-set, transverse screen, is one that is not uncommon in the district.

One of the notable features of this plant is the use of a hammer-mill crusher for producing a finished product. This type of machine, made by the Williams Crusher

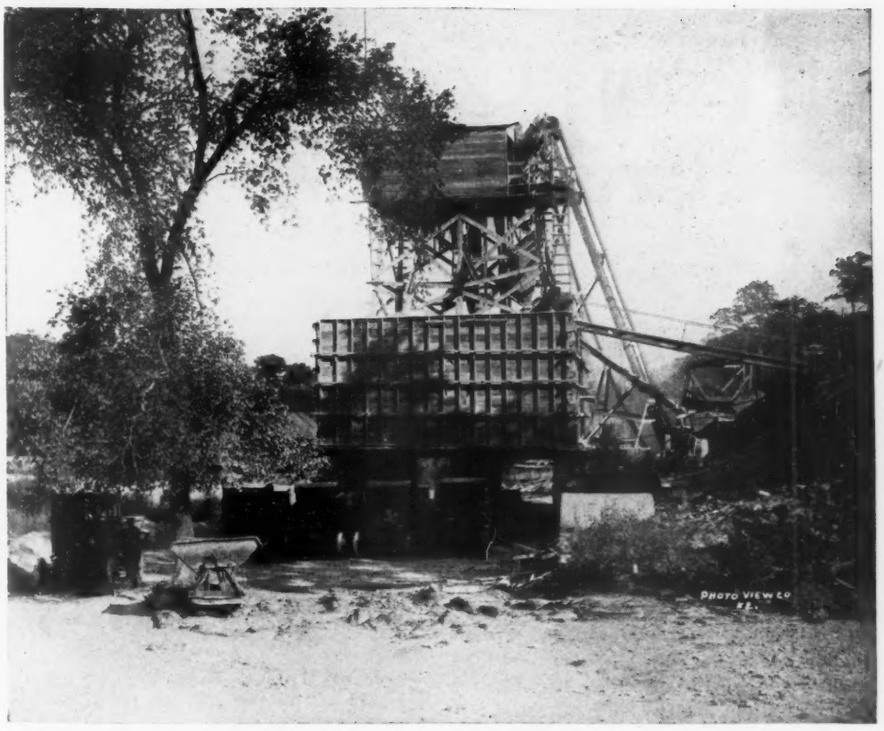


Advantage has been taken of the contour of the ground to provide for the trucks to load and drive out without getting in each other's way

and Pulverizer Co., is in growing use for crushing limestone, as it can break down pieces as large as 14-in. or 16-in. in cube to ordinary commercial road sizes in one operation. The fineness of the product may be regulated by changing the grates.

One good feature of this plant is the way the contour of the ground has been utilized to facilitate the loading and the driving away of the trucks. This is shown in the picture of the plant taken from the quarry side.

J. H. Tobin is president of the American Rock Crusher Co. and J. P. Boyle is secretary and treasurer. The latter is of the firm of Halpin & Boyle, who are well known contractors in Kansas City.



The lower side of the plant. Note the high setting of the screens so that any product may be spouted to any bin desired

Right of Gravel Engineer to Hold City Office Is Questioned

THE connection of Jay A. Craven, president of the Indianapolis Board of Sanitary Commissioners, with the Granite Sand and Gravel Co., which sells gravel to concerns holding contracts awarded by the sanitary commissioners, has occasioned some discussion. Craven says he is employed by the Granite company as engineer on salary, is not a stockholder, and has nothing to do with selling gravel.

As a member of the Board of Sanitary Commissioners it is the duty of Craven not only to award contracts but to pass on their execution and allow payments to the contractors.

When he was asked whether he had considered the question of whether such a connection violated the law he said his attention was called to the matter the other day by T. W. Whitaker and J. P. Smith, examiners for the State Board of Accounts.

Whitaker, when asked about the interview with Craven, said it came about because the examiners found the city of Indianapolis had been buying gravel of the Granite Sand and Gravel Co. and that Craven, in addition to his work as sanitary commissioner, was connected with the gravel company.

Whitaker said he was inclined to believe that, since Craven is not a stockholder of the gravel company, his connection with it and his duties as sanitary commissioner would not be a violation of the law against an official being interested directly or indirectly in a contract. He said he would ask the Department of the State Board of Accounts for a ruling.—*Indianapolis News.*

The cars dump directly to the crusher and the crushed material is carried to the screens by a continuous bucket belt elevator

Michigan May Try New Way of Buying Cement for State Work

AN Associated Press dispatch says that Michigan may try to buy cement at the mills instead of delivered under the present zone system. The report further says:

Under the present system, it is claimed, cement is laid down at points 100 miles from the mill as cheaply as 10 miles away. The plan which the state will seek to put into effect will be to purchase cement at a mill rate, allowing the producer a profit of perhaps 20 cents a barrel. This, it is expected, should permit of a reasonable profit for the manufacturers. The state then will pay the freight charges to the point where the cement is to be used or stored. It is likely that the mills will be asked to quote prices on large quantities and deliver regularly throughout the year. If this plan is followed the state will provide warehouses and store cement near proposed paving projects.

St. Louis Convention of the National Crushed Stone Association

Exhibit of Model Machinery and Equipment Adds Materially to Success of the Meeting

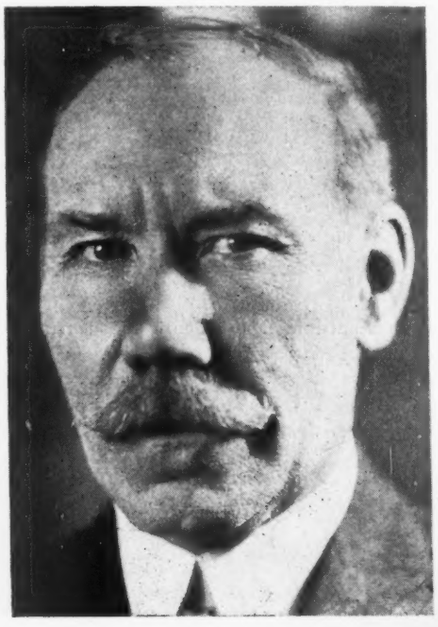
THE seventh annual convention of the National Crushed Stone Association held in St. Louis, January 21-23, will go down in the history of the industry as the first in which the manufacturers of quarry supplies, equipment and machinery played an important part in the success of the convention. It seemed to be the unanimous opinion of all present that the exhibits of models, machine parts, etc., in the room adjoining the convention hall offered unique facilities to quarrymen to become acquainted with new mechanical contrivances in the industry. Likewise it offered the associate members of the National Crushed Stone Association, organized as the Manufacturers Division, a unique opportunity to put their message before over 200 quarrymen, assembled from every part of the United States and Canada.

As ROCK PRODUCTS will show illustrations of some of the exhibits in the February 9 issue and will publish the complete transactions of the convention in the March 8 issue, no attempt will be made here to give a detailed description of the convention or an abstract of the papers and discussions. It was generally conceded that the convention was the best yet held, but this has merely inspired the leaders of the crushed-stone industry to still greater efforts for another year.

Otho M. Graves, Vice-President

Officers Elected

The convention was fortunate in persuading John J. Sloan, president of the Board of Local Improvements of the city of Chicago and prominently identified with the quarry industry for a lifetime, to become president of the association for the ensuing year. Mr. Sloan has been a very efficient treasurer of the association for the past year in addition to his other innumeral duties and activities.



John J. Sloan, President

Otho M. Graves, whose silver-tongued oratory marked him as an advancing leader of the industry at the Chicago convention in 1923, and who this year distinguished himself as a most accomplished and eloquent toastmaster, was elected to the office of first vice-president. Mr. Graves as chairman of the membership committee in 1923-24 and as a director took a lead in nearly all of the activities of the organization in 1923.

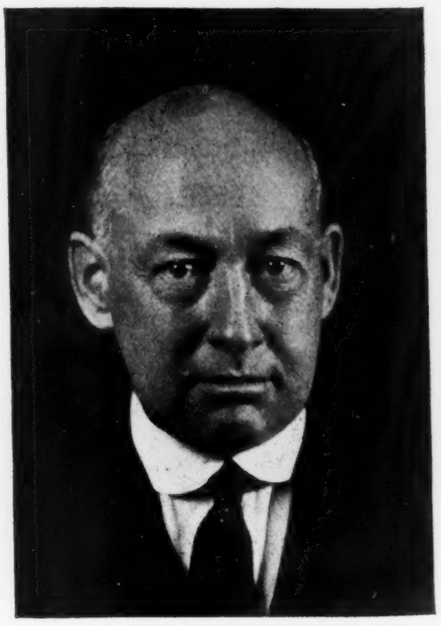
W. W. Boxley, president of the W. W. Boxley Co., Roanoke, Va., and half owner in a number of Virginian quarry enterprises, was elected second vice-president. Unfortunately Mr. Boxley was not able to be present at the convention and we have no portrait of him to show in this issue.

James Savage, secretary and treasurer of the Buffalo Crushed Stone Co., Buffalo, N. Y., was made treasurer, succeeding John J. Sloan. Mr. Savage was one of the first members of the National Crushed Stone Association and has been a director from the start.

A. P. Sandles was re-elected secretary by the board of directors and will continue as heretofore to give his best efforts to the crushed stone industry.

New Directors

The executive committee of the association in addition to the three executive officers consists of W. Scott Eames, president of the New Haven Trap Rock Co., New Haven, Conn., and Harry Brandon, of the Ohio Marble Co., Piqua, Ohio. The other members of the board of directors elected to serve for the ensuing year are: F. W. Schmidt, past-president; John Rice, past-president; A. J. Blair, past-president; W. H. Hoagland, president of the Marble Cliff Quarries Co., Columbus, Ohio; W. L. Sporborg, president of



James Savage, Treasurer

the Rock-Cut Stone Co., Syracuse, N. Y.; B. D. Pierce, Jr., president of the Connecticut Quarries Co., New Haven, Conn.; J. J. Sullivan, of the Dolese & Shepard Co., Chicago, Ill.; Norman Hely, of of the Edward Hely Stone Co., Cape Girardeau, Mo.; A. R. Wilson, president of the Granite Rock Co., Watsonville, Calif.; C. M. Doolittle, president of the Canada Crushed Stone Corp., Ltd.; H. E. Bair, general manager of the France Stone Co., Toledo, Ohio; John Wunder, president of the Trap Rock Co., Dresser Jc., Wis.; Sterling Tomkins, president of the Tomkins Cove Stone Co., New York City; J. F. Schroeder, secretary and general manager of the Linwood Stone and Cement Co., Davenport, Iowa; Thomas McCroskey, general manager of the American Limestone Co., Knoxville, Tenn.; E. C. Dodson, president of the Texas Stone Products Co., Dallas, Texas, and R. B. Tyler, president of the R. B. Tyler Co., Louisville, Ky.

Special Features

Among the features of particular interest to visiting quarrymen was the moving picture show on Monday evening where an opportunity was given of seeing one of the first slow-motion pictures of a blast ever made, many kinds of new machinery in operation, and new processes of interest to crushed stone producers.

At the banquet on Tuesday evening 250 members and guests of the National Crushed Stone Association had the pleasure of listening to a splendid address by L. W. Baldwin, president of the Missouri Pacific Railway. Other speakers were W. J. McGarry, manager of the open-top car service division of the American Railway Association; John J. Sloan, and M. M. Leighton, chief of the Geological Survey Division of the State of Illinois.

Probably the most interesting and valuable session of the whole convention was

A. P. Sandles, Secretary

that on the first morning, which was largely devoted to brief reports by various directors on conditions in their particular producing localities. These were remarkably frank and open; and the sum total was strongly to the effect of unusually healthful conditions in 1923 and every prospect of the same or better conditions in 1924.

There was considerable difference of opinion in regard to labor supply and demand, and the advisability of more immigration. The discussion developed the fact that there was very little labor shortage except in the Northeastern section of the country.

Railways Praised

The railways of the country came in for unstinted praise for the efficiency with which they handled traffic in 1923. There have been many cases of rate reduction and there is every evidence that the railways are assiduously cultivating the good will and the good opinion of their shippers.

The open forums for the discussion of operating problems and the percentages of cost of various items going to make up the total cost of the production and marketing of crushed stone were not as lively as was anticipated. Undoubtedly these parts of the program should have been better organized, and such criticism of the convention was justly made. The directors and executive committee are considering handling such matters another year in group meetings rather than in the general meeting.

As was the case last year, the group luncheons where men of common interests got together and talked over their problems were popular. Probably the most popular of these round table meetings was that conducted by E. M. Lamkin, of the Kelley Island Lime and Transport Co., on agstone, although the one headed by Harry Brandon, of the Ohio Marble Co., to discuss salesmanship was a close second.

Manufacturers' Division

The meeting of the manufacturers division (associate members) of the association was attended by representatives of 32 member companies and representatives of five other companies. The possibilities of further increasing the value of associate membership, and of co-operating with quarry operators was frankly discussed and several decisive steps were taken which undoubtedly will be of mutual benefit to both groups of members.

N. S. Greensfelder, of the Hercules Powder Co., Wilmington, Del., was re-elected chairman of the Manufacturers' Division of the National Crushed Stone Association, and Nathan C. Rockwood secretary and treasurer.

Seventh annual banquet of the National Crushed Stone Association, Hotel Statler, St. Louis, January 22

New Ohio Lime Plant Building

Going After Finishing Lime Business with Unique Guarantee

THE announcement of the incorporation of the William L. Urschel Lime and Stone Co. brings into the lime manufacturing field a new concern whose personnel is viewed with much interest because of the type of men who are at its head.

William L. Urschel, who for the last 25 years has been a leading factor in the development of the Woodville Lime Products Co., will head the new concern, and will have associated with him George J. Nicholson, secretary and treasurer of the White Marble Lime Co. of Manistique, Mich. Mr. Nicholson is well known in the lime industry, having devoted much time to the development of the National Lime Association, and for a number of years having been its vice-president.

William L. Urschel

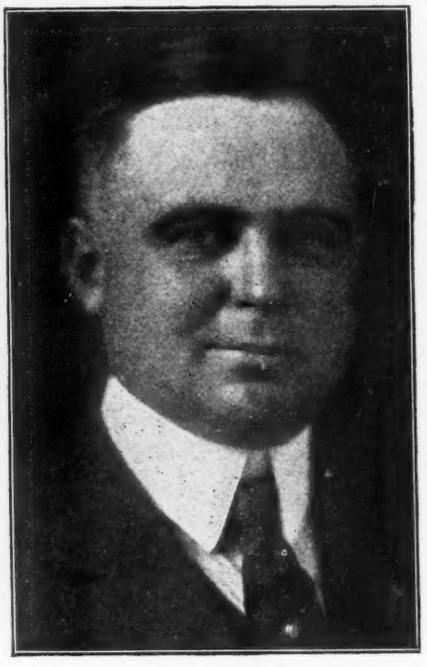
Both men have devoted the greater part of their lives to building up the lime industry, and, as a coincidence, both of their fathers were pioneers in the industry before them.

The new plant will be located just outside the southern limits of Gibsonburg, Ohio. The property acquired consists of 480 acres, representing the largest block of stone land in this district.

The land has all been core-drilled to a depth of 100 ft., and the rock tested, which has proved that they have control of one of the best deposits of dolomite in the state.

The quarry will be opened and operated by a 110-ton 6-yd. Bucyrus shovel. The other equipment consists of forty-six 10-cu. yd. all-steel quarry cars. The arrangement for the dumping of these cars is unusual in that it works out the application that the larger railroads are using in their ore and coal loading docks, the entire car being automatically turned over and its contents dumped into a 5½x7½ ft. Traylor jaw crusher. The crusher is one of the six largest in the world.

The initial installation of the lime plant will be comprised of 18 kiln units, being built by Arnold & Weigel, contractors, Woodville, Ohio. The hydrating plant will be of the very latest design.



George J. Nicholson

The product will be marketed under the trade name, "Urschelime," and will carry with it a unique guarantee, according to the owners of the new plant. The guarantee under which this lime will be marketed is as follows: "This car of lime is guaranteed to be up to the standard of the best Ohio finishing limes. The dealer may take out one ton for trial, and if not satisfactory in every respect, may seal the car up and wire for shipping instructions without any further obligation."

The plant will be ready for production March 1.

South Dakota's State Cement Plant

THE following description of South Dakota's state-owned cement plant is from the Aberdeen, S. D., *News:*

Aided by the excellent weather of the fall and winter, progress on the construction of the South Dakota state cement plant has been rushed.

The $2,000,000 plant is assuming the proportions of a little city and visitors constantly remark of the undreamed of size of the enterprise.

The office building is completed, furnished and in use. The raw materials storage building, 80x408 ft., is nearly finished. Cementing of the tile roofing and putting on of a small amount of corrugated sheeting for the walls remain.

An erector is here to begin the installation of the electrical crane which will run lengthwise of the building.

The bag cleaning and storage building and the finished storage building for the storage of the finished product are complete, except for the installation of the bag filling machine.

The shop and warehouse building is finished and much of the machinery has been put out within the structure but has not been installed. This labor is being saved for bad weather.

The main mill building, where the main work will be carried on, is the farthest from complete, and just now is the center of activity. The foundations for the grinders of the raw materials are in. Six concrete slurry tanks have been put up and the forms are being removed. These tanks will hold sufficient slurry to run the plant for two days.

Two kiln feed tanks of concrete are finished. These are correction tanks, where the slurry that goes into the kilns is made to contain just the correct proportion of ingredients.

Two kilns, 10 ft. in diameter and 150 ft. long, are being unloaded from box cars, sections riveted together and being rolled into place.

Wooden forms for the pouring of concrete for the waste heat boilers and the auxiliary emergency boiler are in place and concrete will be poured in them soon.

From the kilns the burnt cement product goes into the two coolers which are now practically in place. From here it goes to the finished grinders, which have been unloaded from the car and are now ready to be placed on the foundation built for them.

The steel superstructure of the main building has not been begun; it will be erected after the machinery has been put in place.

Work on the foundation of the rock crusher building just to the west of the raw materials building has been begun. Contracts for it and the coal mill building were let only recently by the State Cement Commission. The coal mill building will be erected just south of the main mill building and will pulverize the coal to be shot into the kiln to furnish heat for baking of the slurry.

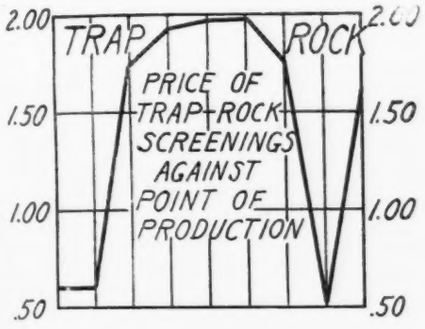
A smokestack, 270 ft. high, now complete, already gives a factory-like appearance to the plant. Six large concrete silos for cement storage in two tiers of three each, make a bulk over 72 ft. high and 108 ft. wide.

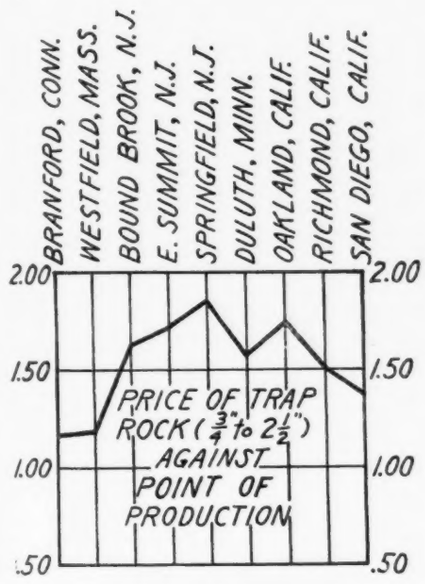
Rock Products Prices at Point of Production

THE graphs shown on this and the following pages have been carefully prepared from ROCK PRODUCTS markets for 1923. They represent the average price of the year against point of production. In the main the curves are self-explanatory, but in a few instances a word or two should be added to explain apparent inconsistences:

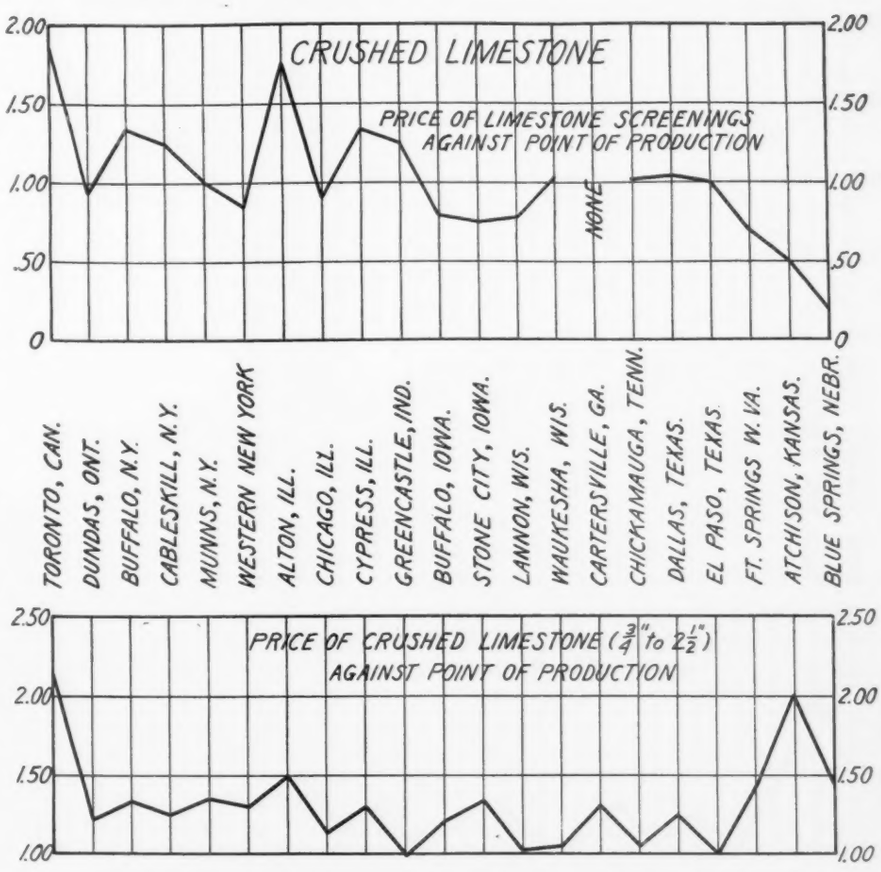
One of these instances is found in the price of sand and gravel at Des Moines and other Iowa points. The gravel price is the highest on the gravel curve, while the sand is almost the lowest on the sand curve. This is not surprising to one who knows the local conditions. Gravel is in strong demand at these points, but deposits which are dredged contain perhaps three times as much sand and gravel. Consequently gravel brings a much higher price, the sand being looked upon as a byproduct of the gravel business.

The peaks which represent the prices at St. Louis and Pittsburgh are explained by the fact that these are wharf prices. Hence some cost of transportation is added to the production cost and the quoted price is that much higher. Another peak in this curve

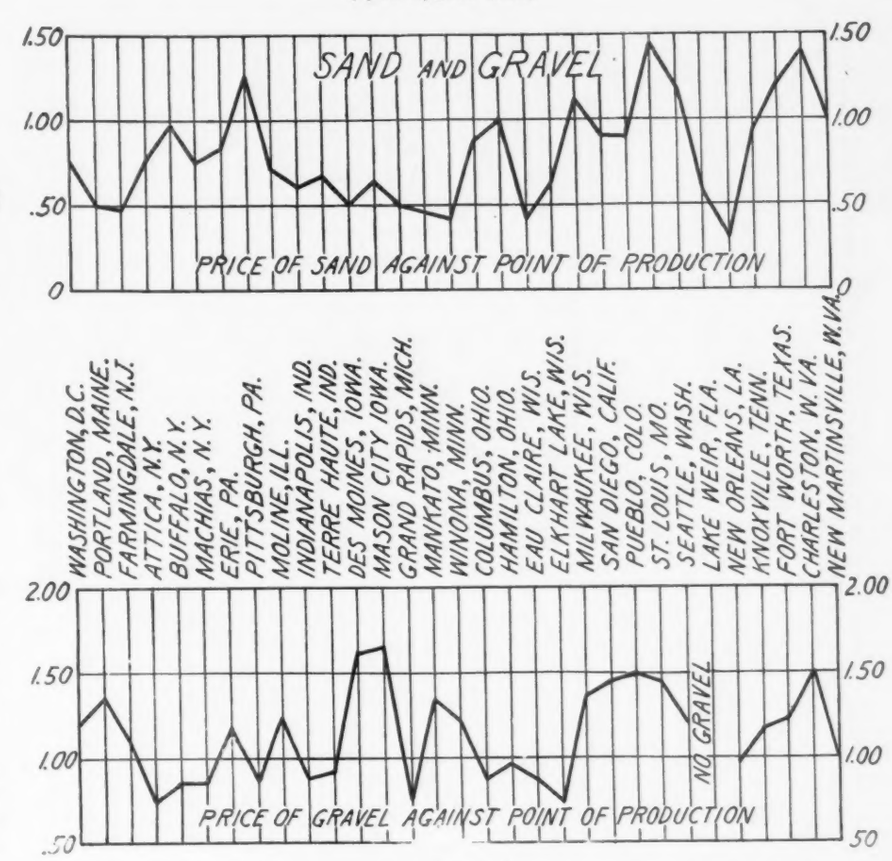




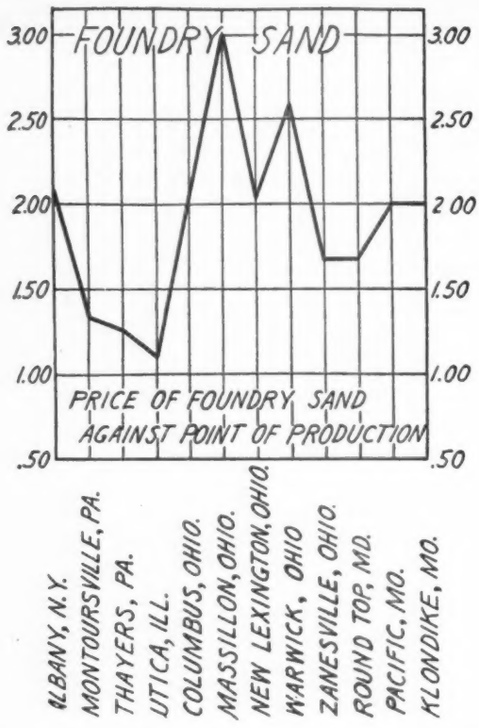
Trap rock and screenings

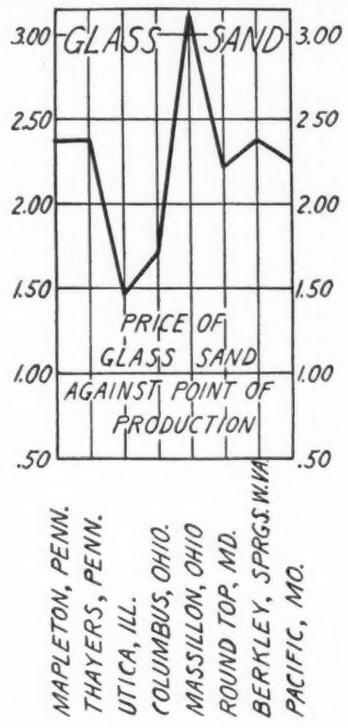


Crushed limestone and screenings. Note the regularity of price of ¾ to 2½-in. stone

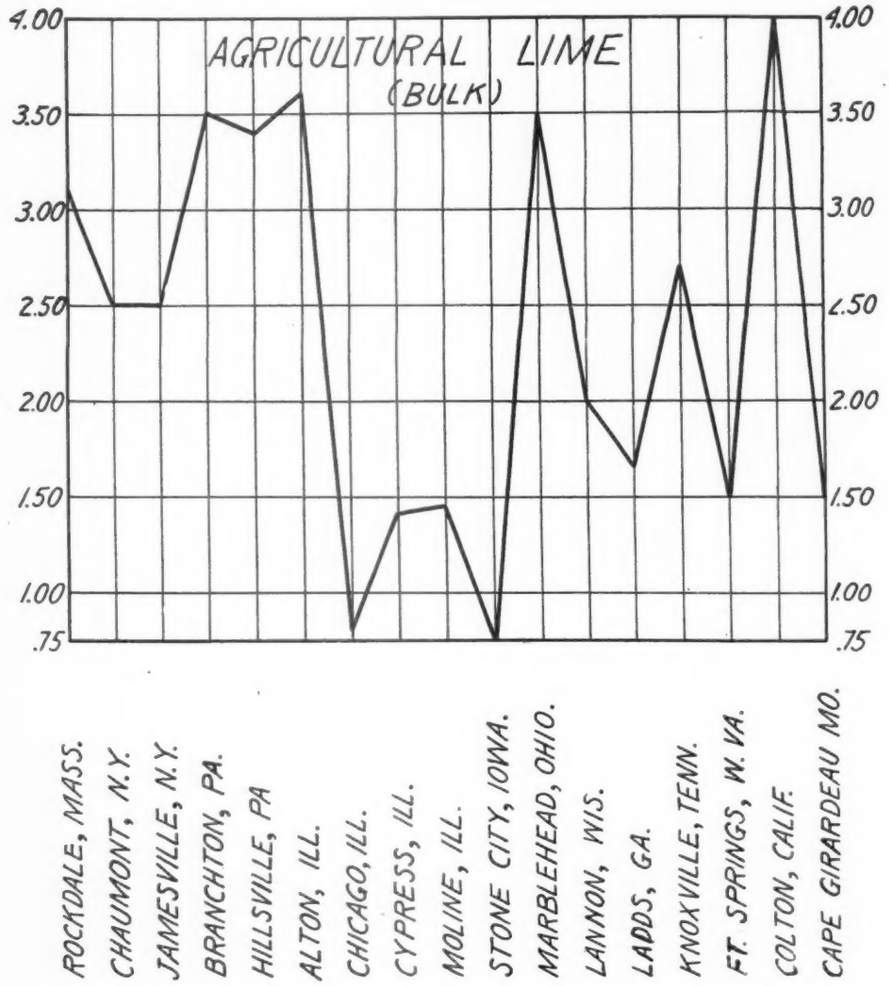


The variations in the prices of sand and gravel come from local conditions as explained in the text

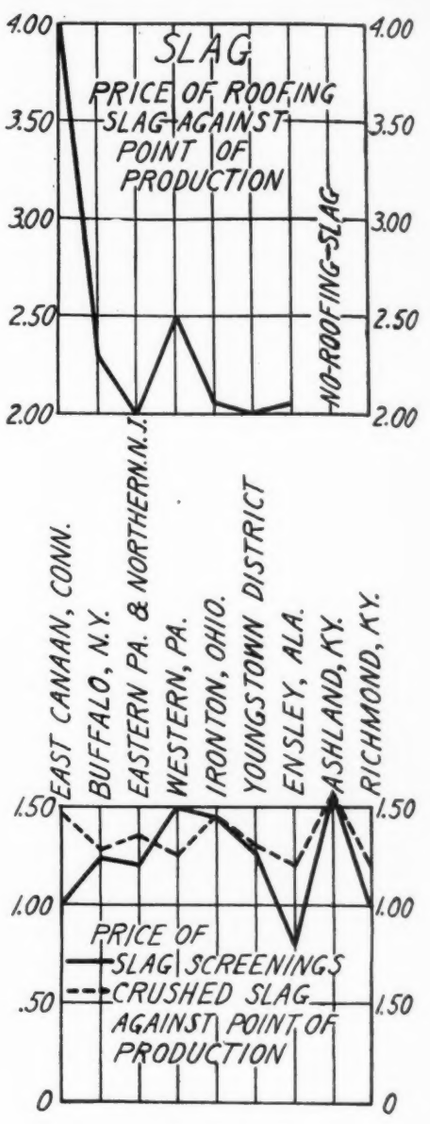




Glass and foundry sand prices vary according to the difficulty of preparing the raw material



Agricultural lime (not hydrated) shows wide differences, as the market varies from other conditions than that of supply and demand of the material itself



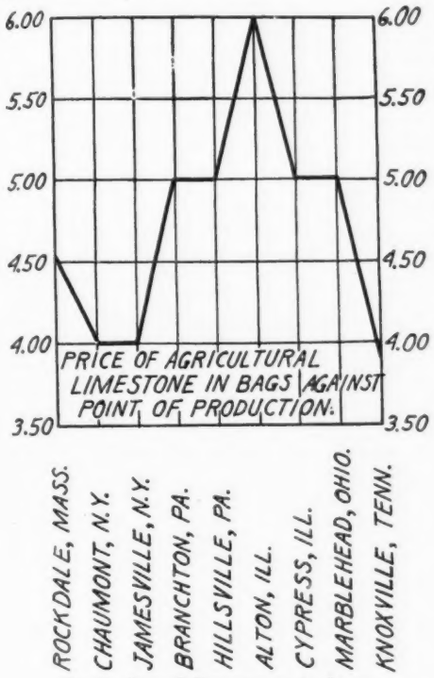
Slag prices

is explained by the scarcity of sand and gravel in the locality in which the plant is situated. When this limited supply is coupled to difficult working conditions, the high price is easily understood.

The price of crushed limestone runs remarkable even, all the prices but two lying between $1 and $1.50. These are explained by conditions of local demand and supply. Screenings show a wide fluctuation, but the market for screenings is affected by so many things that this not surprising. The same may be said of agricultural limestone. The condition of agriculture has varied widely in different parts of the country and this is reflected in the agricultural limestone price, and there are other factors which have influenced the local demand at certain points.

Trap rock prices make an interesting curve. "Trap" is a name which covers a number of rocks and some of them are the hardest that are broken to commercial crushed stone. Such rocks will withstand a pressure of 55,000 lb. to the inch and they are practically without fracture planes or

other characteristics which would make them easy to break. It is obvious that if they are to be sold at all, they must bring a good price. Silica sand is another product in which the nature of the crude material affects the selling price. Practically all silica sands are made from crushing sandstone, but some silica sandstones are friable and contain no binder, so that they are only compacted sands, while others are so hard and the grains are so bound together that they are used for building stones. Naturally these cost much more to crush and screen and dry for the market.



Agricultural limestone in bags

The point which strikes one forcibly in considering these prices and the local conditions that influence them is that rock products are probably less subject to artificial control than the prices of any other commodity. The very nature of these products determines this. The raw material is cheap and abundant. The capital required to go into the business is not large (compared to that required to start a steel plant, for example) and the territory which a plant can supply is limited, on account of freight rates. All these things make for plenty of competition and low prices. Any attempt to monopolize a market results in immediate competition and a drop in selling prices. The public may rest assured that it gets its money's worth whenever it buys a carload of sand, gravel or crushed stone *at the plant*. Freight and trucking will probably make it cost four or five times the plant price when it reaches the job.

Selling price has been fixed more by actual cost of production than by supply and demand in these industries and competition has naturally taken the shape of competition in service to the customer rather than price cutting, as there is usually no margin from which to cut.

Outlook for Cement and Other Rock Products Industries in Canada

THE cement industry in Canada has not been enjoying as much business in late years as the plants would warrant. Edwin Tomlin, director-treasurer of the British Columbia Cement Co., Ltd., Victoria, B. C., recently made some interesting comments on the cement business which show the situation as it exists in Canada at present. He says:

"We have been operating at less than one-third of our capacity during the last year and our larger plant at Tod Inlet has been shut down for two and a half years through lack of trade. We do not see any likelihood of opening it this year unless there is a marked improvement in the cement business.

"We have been completely shut out of the export market due to the low prices which Norwegian, Swedish, Beligum, German and other European manufacturers are making for the export trade. Our European competitors have the advantage of very low wages, low freight rates, and depreciated currencies to help them in bidding for overseas markets. We did not ship in 1923 a single barrel for export to such countries as Mexico, Guatemala, Fiji, and in other places to which we formerly made shipments. It looks as though it would be a long time before we will again be in a position to quote for export trade.

"The outlook for this year is encouraging but we do not look for any increased business over what we did in 1923. Financial recovery in Canada from the effects of the war and the financial crisis of 1921 is much slower than any of us anticipated and we have no reason to think we can expect a very marked acceleration this year. Business conditions are undoubtedly on the mend and, with a settlement of some of the distressing problems in Europe, we might confidently look forward to another period of prosperity. It seems far away at present but with hard work, perseverance, and reasonable economy all around we have strong faith that good times are again in store for the Dominion of Canada."

F. P. Jones, president and general manager of the Canada Cement Co., Ltd., Montreal, reports that the output of their factories in 1923 was practically the same as in 1922. He says:

"Market conditions are very poor for the simple reason that the farmers' produce has deflated more rapidly than most other commodities, the result being that rural districts have little or no purchasing power. There has been an abundance of raw material but prices are extremely high. The labor situation has been good and efficiency the best we have seen."

The Toronto Brick Co. recently completed the rebuilding of its Swansea, Ont., plant. It has two sand-lime brick plants in Toronto and a clay brick plant at Milton. At the Swansea plant the sand is obtained from a pit, north of the plant, which is transported to the sand house 1500 ft. by a gasoline tractor on a narrow gage track. The company operates its own lime kilns at Cohoconk. Modern machinery is used throughout for proportioning, mixing, hydrating, tempering, pressing, and curing. Mechanical conveyors are used for handling materials and the operation of the plant is efficient in every respect. The Swansea plant has a capacity of 50,000 and the Toronto plant 100,000 sand-lime brick per day. The demand for sand-lime brick in 1923 has been good, plants being operated to capacity in Toronto. These brick were used for foundations, lining, and walls for stucco as well as for general construction purposes.

The Granite Concrete Block Co., Ltd., Toronto, of which J. A. Livingston is president, has had a good year, the increased output being 20 per cent ahead of 1922. The present situation is favorable. Building this year should show an increase over 1923 as operations are not keeping up with the steady growth of the city and suburbs.

Carroll Bros., Sherkston, Ont., produced more limestone and sand in 1923 than in any year since 1920. Business has been good, with prices stationary.

Bureau of Census Wants Figures

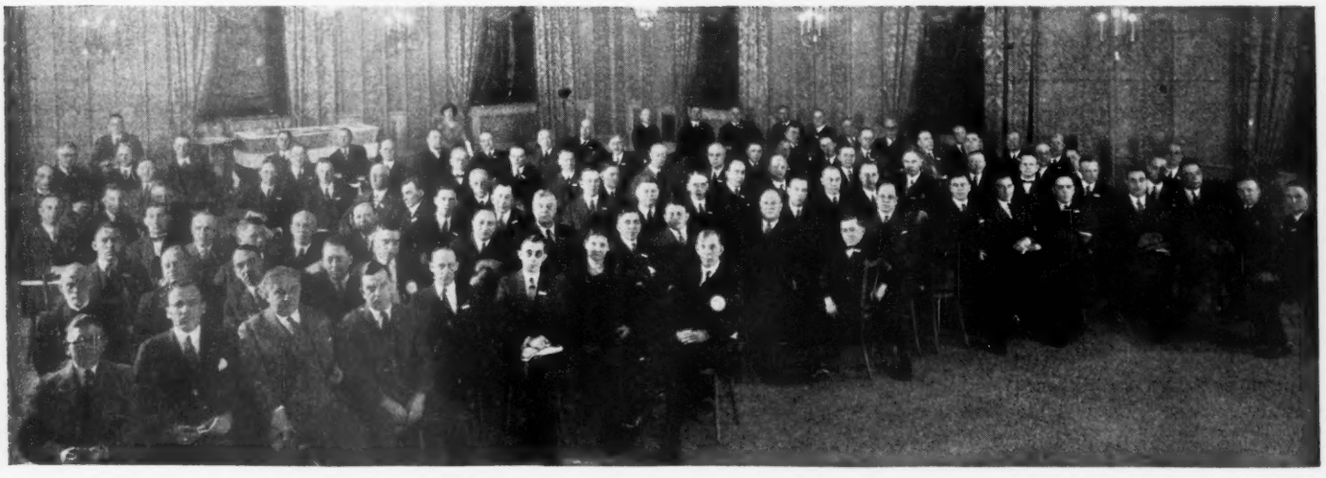
THE Bureau of the Census is now engaged in collecting statistics of manufactures covering the calendar year 1923. These statistics are compiled in accordance with the Act of Congress of March 3, 1919, and the schedules have been prepared after conference with the associations and others interested in the various industries. The schedules were mailed to the manufacturers on January 2 and the Director of the Census is very anxious to publish the statistics at the earliest possible date in order that they may be of the greatest possible commercial value. The manufacturers engaged in our industry are urgently requested to forward their reports to the bureau at the earliest possible date, preferably before the end of January. The bureau has agreed to tabulate the results for our industry as rapidly as the schedules are received and publish the totals within a few days after the receipt of the last report.

Eighth the Best of Sand and Gravel Conventions

Producers Attend Big Meeting at St. Louis to Hear Excellent Papers and Adopt a Strong Program for the Coming Year

IT is a matter of official record that the eighth annual convention of the National Sand and Gravel Association, held at St. Louis, January 22 and 23, is the best in the history of the association, for a resolution to that effect was passed at the close of the convention. It was not alone that Executive Secretary Burrows had prepared an excellent program or that the attendance was good. The success of the meeting lay in the "atmosphere," the general feeling that the sand and gravel industry had arrived and that it is reckoned among the important industries of the country.

A FULL report of the Eighth Annual Convention of the National Sand and Gravel Association, including all the important papers and discussions, will be published in the March 8 issue of ROCK PRODUCTS.



Members of National Sand and Gravel Association in convention

This was brought out in the speech in which the mayor of St. Louis welcomed the delegates and formally opened the convention on the morning of January 22. He spoke of the old days, when sand used to be pumped from the river by several individuals who fought each other to extinction in the struggle for business. It finally got to a point where sand was selling for 5 cents a load of 35 cu. ft.—and the sand man gave the driver a glass of beer to hold his trade. We have learned in these later days that ruinous competition and business failures have to be paid for in the end by the community and the mayor was correct in stating that association activities prevented these things by informing the membership as to the actual cost of production and substituting decent and intelligent competition for throat cutting.

The day before the convention the directors of the association went into executive session at the lunch hour and remained until after 7 that evening. Committees on nominations, resolutions and changes in the constitution were chosen and submitted reports. The work of this session of the directors and of the committees, as well as that of the cost keep-committee, was later presented to the convention.

This was an important meeting from a legal standpoint, as this is the first convention that has been held since the National Sand and Gravel Association become an incorporated body, and it was necessary for certain resolutions to be adopted in order to transfer the property and other assets of the old association to the new.

About 165 members had registered when the convention proper was called to order by President Alex Dann, who spoke of the satisfactory condition of the association and its steady growth in the past year. He was followed by the secretary-treasurer, John Prince, who showed that the association was out of debt and meeting its current expenses from its dues. The monthly system of collecting dues had been more successful than the quarterly system. Hugh Haddow, as chairman of the cost accounting system committee, gave his report and showed a sample of the cost sheet which was in the hands of the secretary for distribution.

The paper on "Depletion, Depreciation and Income Tax Problems," by W. I. Kircaldie of the American Appraisal Co. of St. Louis, was the first of the regular papers and it was listened to with the greatest interest. A number of questions relative to income tax problems were asked at its close, and these were answered by Mr. Jackson.

W. C. Huntington of Wellborn & Huntington, Chicago, had been scheduled to speak on "Exploration, Development and Valuation of Sand and Gravel Deposits," but he confined his address to the effect of the wayside pit and county pit. His remedy was simply the finding and presentation of the actual facts as to costs, markets, etc., which in themselves are

enough to show that no inefficient, undeveloped pit operation can really compete with a highly developed, well capitalized operation in making a product which must meet exact specifications.

A. J. R. Curtis of the Portland Cement Association was to have spoken at this time, but was unable to be present.

In the afternoon session, Professor Dake of the Missouri School of Mines led off a discussion of the geology of sand and gravel deposits. He showed how the origin of such deposits often determined their commercial value. He was followed by E. Guy Sutton of the Carmichael Gravel Co., who elaborated some of the points Professor Dake had made. R. Snoddy of the Coon River Sand Co. closed the discussion with a very valuable explanation of his methods of prospecting a deposit by means of a small orangepeel bucket in a big pipe.

W. J. McGarry, manager of the Open Car Section, Car Service Division of the American Railway Association, made one of the best addresses heard by the meeting. He gave the gratifying information

E. Guy Sutton, newly elected vice-president

that there was little fear of any car shortage in the next five years. Mr. McGarry thought that it was time for the railroads and shippers to consider themselves partners instead of opponents in serving the public, an opinion which is growing in favor everywhere.

T. E. McGrath, of the McGrath Sand and Gravel Co., who followed him, also said it was time for the railroads and sand and gravel producers to form a friendly alliance. He explained the position which has been taken by the association regarding coal car demurrage, which is that the

John Prince, the newly elected president

association asks no favors, but does ask that coal mines be placed on the same footing as sand and gravel producers in respect to demurrage.

Earl Zimmerman of the Ohio Gravel Ballast Co. spoke of washed gravel ballast production and showed how its use was increasing owing to its lower first cost and the lower cost of placing it and maintaining it.

There was a good open forum on "Transportation and Transportation Equipment," which was started off by David Alexander of the Dexis Sand and Gravel Corporation, who gave some very low cost for transporting with standard gage equipment. J. L. Shiely of the J. L. Shiely Co. spoke of the particular value of industrial railroad equipment in his own work. "Draglines as Conveyors" was the subject handled by C. H. Young of the Robbins-Young Co. and Jesse A. Shearer of the Indiana Gravel Co., who is certainly entitled to speak with authority since he has had so much to do with dragline development. Alex W. Dann spoke of barges, giving an interesting account of the evolution and construction of the steel barge. Hugh Haddow, Menantico Sand Co., closed the discussion with a talk on pumping sand through pipe lines, in which he has had much experience both in the contracting and sand and gravel fields.

On the second day, January 23, there were three excellent papers. W. C. Markham, executive secretary of the American Association of State Highway Officials, gave an excellent talk on the value and importance of public roads, taking his text from President Coolidge's recent remarks on the subject.

Col. R. C. Boyden of the Portland Cement Association gave an authoritative paper on the relation of aggregate to scientific concrete. He gave some rather astonishing figures, showing the possibility of designing concrete to exact strengths, as "1000 lb.," "2000 lb." or "3000 lb." concrete, by using aggregates of the correct fineness modulus and the proper water cement ratio. He asked for the co-operation of aggregate producers in making a *uniform* product, since uniformity is essential to insure that the mixture as designed is the same as that which goes into the work.

J. T. Vorshell, district engineer, Chicago, representing the Bureau of Public Roads, gave a very practical talk on gravel in public roads and explained how the contractor could actually pay more for a properly graded gravel and yet save money on the job.

The remaining papers and discussions on the program were omitted, although it was planned to have them in the afternoon, but the time did not permit.

The first part of the afternoon session was given to the election of officers and reports of committees. John Prince of the Stewart Sand Co. was elected president; E. Guy Sutton, Carmichael Gravel Co., vice-president, and J. L. Shiely, J. L. Shiely Co., secretary-treasurer.

Chairman Ross of the committee on a program for the coming year read the committee's report, which embodied nine recommendations.

The first of these was for the continued economical administration of affairs.

The second was that four cities should be chosen, one being that in which the "Good Roads Show" was held, and submitted to a referendum vote of the members as a means of choosing the city for the next convention. It was also recom-

J. L. Shiely, newly elected secretary-treasurer

mended that manufacturers be asked to make exhibits and to have engineers present at the next convention.

The third asked for a continuance of the relation between the association and the American Society for Testing Materials.

The fourth touched on railroad matters and asked the association to combat all priority orders by any fair means, in case such were issued. Also to ask for the continuance of Kelley's Tariff, No. 228, and further to ask that the coal industry be placed on the same basis as the sand and gravel industry in respect to demurrage and reconsigning privileges.

The fifth recommended certain promotional work, especially among architects and engineers, through the medium of the *Bulletin*. The sixth was also for promotional work through the preparation of films for exhibit.

The seventh recommended a committee to consider problems of depreciation and depletion and submit its report to the executive committee.

The eighth proposed a program for increasing membership during the coming year.

The ninth recommended that the present rate of assessment be retained.

The recommendations were adopted as read.

A number of resolutions were read by Chairman Haddow and passed by the convention. The first of these had to do with the transfer of property from the old association to the new.

The second commended President Coolidge's attitude on federal-aid roads and asked Congress to pass the Dowell bill.

The third commended the American Railway Association for its work and reaffirmed the opposition of the association to governmental interference in railroad operation. The committee was asked to amplify this resolution to show appreciation of the railroads' efforts in the matter of car supply during the past year.

The fourth recorded this convention as of inestimable value and the best on record and thanked the committee and others who had aided in its preparation.

The fifth very properly thanked the retiring president, Mr. Dann, for the unstinted time and thought he had given to the work.

Motion pictures filled up the rest of the afternoon, and after these were shown the convention adjourned.

Not the least factor in the success of the convention was the fact that it was held at Hotel Chase, one of the most beautiful and modern hotels in the country. Although it is situated in the residential part of St. Louis, on the edge of Forrest Park, it was thought that this was an advantage in insuring full attendance at the various sessions.

The regular banquet was held on the evening of the 22nd in the roof garden of the hotel and was rather notable as a social function. An excellent musical program was given by way of entertainment and dancing followed. It is the custom of the members of the association to bring their wives to the convention, and this year it was more than usually observed.

Bauxite in 1923

ABOUT 500,000 long tons of bauxite was produced in the United States in 1923, according to estimates given out by the Department of the Interior through the Geological Survey. This quantity is equal to the largest annual domestic production before the World War. The largest producer was the American Bauxite Co., whose plant at Bauxite, Ark., is said to have handled about 1000 tons a day. Three other companies also mined bauxite in Pulaski and Saline counties, Arkansas. The operations in the Eastern fields were less extensive, as the older deposits there are worked out. About eight companies, however, were working deposits in Alabama, Georgia, and Tennessee, and the output was probably not much less than in 1922, when 42,810 long tons were produced. New deposits like those worked in Macon, Sumter, and Wilkinson counties, in central Georgia, were opened in 1923 in east-central Alabama.

A FULL report of the Seventh Annual Convention of the National Crushed Stone Association, including the text of all the papers and discussions, will be published in the March 8 issue of ROCK PRODUCTS.

The imports of bauxite, most of it from South America but some from France and Dalmatia, amounted to 8500 tons a month, indicating a total for the year of 102,000 tons, as compared with 23,656 tons in 1922. All the bauxite received from South America came entirely from British Guiana, where the Demerara Bauxite Co. reopened its mines and completed its drying and loading equipment at Mackenzie, on Demerara river, 60 miles above Georgetown. This bauxite, which is said to be of excellent grade, was used by manufacturers of aluminum and aluminum salts. It can probably be landed and sold at Eastern markets cheaper than domestic bauxite, even after the import duty of $1 a ton has been paid and its importation will seriously affect the business of some domestic bauxite miners. A large drying and loading plant was erected on Cottica river, 100 miles above Paramaribo, Dutch Guiana, from which bauxite will be exported during 1924.

Domestic bauxite was quoted at $6 to $9 a ton until June, 1923, but afterward the quotations on all grades dropped 50 cents a ton. Foreign bauxite was quoted $1 lower than domestic until the price was reduced, when the difference was only 25 cents a ton.

Franklin Limestone Company Increases Its Plant Capacity

THE Franklin Limestone Co., with branches at Franklin, Lewisburg and Mims, and home offices in Nashville, Tenn., is making an enlargement by the addition of a plant a half mile from the one at Mims to cost $150,000. This addition will give Nashville what will be, if it be not already, the most extensive commercial rock crushing concern south of the Ohio river, with a daily output of 3200 tons, or 80 cars, says a Nashville daily paper.

The Franklin branch has a daily output of 1000 tons, those at Lewisburg and Mims 600 tons each. The new unit will yield at least 1000 tons daily. The president of the company is James E. Rodes, an intensive coal operator and manufacturer.

The company has had a career of notable growth. The first unit was at Franklin and those at Lewisburg and Mims were added in the order named. The expanding needs of the business made enlargement a necessity, and this is being made upon the most approved scale. A half mile spur track and bridge over Mill creek, leading from the Nashville, Chattanooga & St. Louis railway, are features of the expansion, besides the huge crushing machinery, equipment and building.

The Louisville & Nashville railroad and the Nashville, Chattanooga & St. Louis railway in the last eight months of 1923 used 44,000 cu. yd. of this stone for ballast. The use of the ground stone has been found very serviceable, particularly to revitalize tobacco lands and to get clover and alfalfa. Fifty cars were sent last season to Springfield for tobacco growers, and 60 cars along the Clarksville & Princeton division. Farmers in Maury, Williamson and other middle Tennessee counties are using it increasingly to get clover and alfalfa.

Wisconsin Highway Plans

THE Wisconsin State Highway Commission plans to lay 270 miles of cement highway during 1924, increasing the state trunk system, already concreted by this much. The 2500-mile addition, voted at the 1923 legislature, will be constructed over a period of several years. The state trunk system is now 7500 miles in length and at the completion of the present plans will cover the state with a network of 10,000 miles.

Bids will be opened on January 15 for actual highway construction. They will be open until January 25 and many bids will be entered, it is thought, during the annual good roads school which opens on January 20.

U. S. Gypsum Now in Strongest Financial Position of Its History

ADVANCE of United States Gypsum stock on the Chicago Stock Exchange has been accompanied by numerous rumors, most of which are pure guesswork and some having at least partial basis in discussions among interests associated with the company.

Recently Gypsum stock sold as high as 98 and closed at 96. Wednesday it ranged from 93½ to 98 and closed at 95, with only 12 shares figuring in the transaction that established the final price. On Saturday the stock sold at 99, the record price for all time. This represents an advance from the low point of 50 last year against a high for the period of 92. No further back than the spring of 1921 it was at 18.

The real reason for the strength of the stock, aside from any artificial manipulation, is the fact that 1923 was Gypsum's biggest business year, it is now in the strongest financial position in its history, and the pending acquisition of the J. B. King & Co. property, together with a prospect for a continuation of active building throughout the country, hold a prospect for another large earnings period in 1924.

Earnings of 100 Per Cent

In 1923 Gypsum showed earnings of between $18 and $20 a share on its common stock, or approximately 100 per cent, as the shares are of $20 par value. There was a considerable addition to working capital despite expenditures for additions and expansions, and the balance sheet to be presented to stockholders next month will be the best ever shown by the company. Earnings for 1923 will compare with $6.56 a share in 1921, $6.52 a share in 1920, $3.46 a share in 1919, and $1.56 a share in 1918.

Purchase of J. B. King & Co., it can be stated without contradiction, virtually has been closed. There are a few minor details, mainly legal in character, to be passed upon before it can actually be said the transaction is consummated, but there is practically no doubt that it will. The amalgamation will be on the basis of an exchange of stock and will require no new financing.

This purchase will add greatly to Gypsum's potential abilities. Gypsum has been negotiating for it for three years, principally because there is a stretch of about 50 miles along the Eastern seaboard which can be best served by water, a function which J. B. King & Co. will fulfill. At present U. S. Gypsum Co. has a plant at Oakfield, N. Y., but this can handle only a part of the business. The slack in the past has been taken up by shipments East from Gypsum and Genoa, Ohio, which was more expensive because of rail tariffs. The King company has among the largest deposits of gypsum in the world in Nova Scotia, has three shipping points, a fleet of vessels and a plant on Staten Island, for converting raw materials. The company has capital stock of $3,000,000 and assets upward of $4,000,000.

Puts Back Part of Earnings Into the Business

U. S. Gypsum for some years has followed a policy of plowing back into the properties a large proportion of each year's earnings. All engineering, designing, and construction are done by the company's own forces which has resulted in a considerable saving in building costs. The plant at Sweetwater, Texas, on which a million dollars has been spent, will be in operation before May 1 and will increase capacity for the Southern territory. Various other improvements and extensions were put through last year, which will show in the property account, although the company allows liberal depreciation against this each year.

The company is the largest manufacturer of gypsum products in the world, having been formed in 1901 by a consolidation of 35 different companies in that line. It manufactures all classes of gypsum products, including various types of plaster, and has shared to the fullest in the prosperity engendered by the building boom of the last two years.

The company has just distributed a 20 per cent stock dividend, which brought the common stock outstanding up to $5,894,568, against preferred of $6,020,300. There is a small amount of stock in the treasury which will be given in exchange for the J. B. King & Co. stock.

Since December 31, 1919, the company has paid cash dividends of 4 per cent or 80 cents a share annually. Additionally there were stock dividends of 5 per cent each in 1920 and 1921, 10 per cent in 1922, and the 20 per cent declared at the end of 1923.

At the end of 1922 the company had net assets applicable to the common stock of $11,046,702, or about $50 a share. There is only a small floating supply of the common stock, the bulk of which is very closely held, which has made the running up of the price comparatively easy. — *Chicago Journal of Commerce.*

[The above is typical of the remarkable increase in values which has taken place in many rock products industries.—Ed.]

Wages in British Quarries

THE English *Quarry Managers' Journal* publishes in its last issue the rate of wages in some British quarries. The highest wage noted is that paid to "knoblers," 9/0¾, which works out to $2.17 per shift.

West Cumberland—Limestone quarrymen: Decrease of 2s. per shift for blacksmiths and joiners; of 3s. per shift for boys under 16 years. Rates after change: Knoblers, 9/0¾; haulage engineers, 8/8¾; blacksmiths and joiners, 8/11; day borers (1st class), 8/6¾; day laborers, 7/10¾; ruddmen, 7/4¾.

Thames and Medway — Chalk quarry workers: Decrease of ½d. per hour for day workers, and a corresponding decrease for piece-workers. Hourly rates after change for laborers: Grays area and Little and West Thurrock area, 11½d.; Kent area, 11d.

Unemployment in stone quarrying and mining has increased recently, as shown in the figures furnished by the ministry of labor, of those receiving unemployment pay, but the same figures show increased employment in sand and gravel pits and slate quarries. The figures are:

	Receiving Unemployment Pay	Increase or Decrease
Stone Quarrying and Mining	1,951	+260
Slate Quarrying and Mining	100	— 41
Clay Sand, Gravel, and Chalk Pit	1,674	—146

Gregory & Wilson Merges with Southern Sand Company

CONSOLIDATION of the Southern Sand Co. of Little Rock and the Gregory & Wilson Construction Co. of Little Rock, Ark., into a new $500,000 corporation, to be known as the Southern Material and Construction Co., has been announced by A. C. Butterworth, president of the Southern Sand Co.

Both the Southern Sand Co. and the Gregory & Wilson Construction Co. are among the largest concerns of their kind in the state.

Canadian Highways

A. W. CAMPBELL, Chief Commissioner of Highways for Canada, gives the average cost per mile for highways erected this year under the Canada Highways Act. In Ontario the cost was $34,252.39; British Columbia, $23,918.00; Quebec, $10,840.58; Nova Scotia, $5,730.15; Manitoba, $3,895.00; Prince Edward Island, $2,719.49, and Saskatchewan, $2,199.16. During the year 112 projects were agreed to covering 1,206.94 miles at a total cost of $9,265,055.27 towards which the Dominion Government contributed $3,706,022.11. The average cost per mile as a whole was $7,676.43.

"Agstone" Firmly Established in Ohio and Pennsylvania

National Convention at Pittsburgh Shows Producers Enthusiastic in Spite of Depressing Agricultural Conditions During the Past Year

AGRICULTURAL limestone ("agstone") producers have settled themselves in the saddle for a long, persistent effort to sell the farmers of Ohio and Pennsylvania a constantly increasing percentage of the

P. B. Reinhold

5,000,000 tons per annum of limestone, which all soil experts agree are needed for the maintenance of the cultivated lands in these two states alone. To that end the National Agstone Association is maintaining a fellowship at Ohio State University covering a five-year program, the principal object of which is to definitely determine the relative effectiveness of agricultural limestone of various degrees of fineness. The association is also maintaining a library research worker at Ohio State University who reviews the current, scientific and agricultural literature of this and foreign countries, and furnishes members of the association with abstracts in such language that the data may be employed in sales promotional work.

This work has now been going on for nearly a year and it was the unanimous opinion of the members of the association that the money so spent is an investment of great importance to the future of the industry.

The results of spending about $5000 in a national advertising campaign were not so satisfactory to the members, and after much discussion it was decided to suspend activities in this field until such a campaign could be better organized and more consistently followed up.

The Distribution Problem

There was much discussion of the reason why agstone sales did not increase faster. Two fundamental difficulties were quite clearly established. First, there is not sufficient margin of profit in the material as now marketed to allow a fair commission to dealers and agents. Second, there is considerable difference of opinion in the limestone quarry industry as to whether agstone is the real product or a byproduct.

These two problems are interwoven for so long as agricultural limestone screenings and dust are looked upon by big producers in the industry as waste materials, to be disposed at any figure above the cost of wasting, just so long will the price of agstone be kept at bare cost plus a very narrow profit, or no profit at all. Certainly the opportunity to add sufficient margin to the cost of production to provide for advertising and dealers' commissions is hard to obtain under present conditions.

As in the case of practically every other commodity, producers are being forced to the conclusion that there is no substitute for personal salesmanship. In spite of the fact that farmers are constantly howling about the high cost of distribution and dealers' profits, in the case of agstone we have an obvious demonstration of the actual forcing of dealer-distribution on an industry anxious, if possible, to avoid it.

Prof. Firman E. Bear, chief of the Soils Department, Ohio State University, Columbus, Ohio, in a talk at the Pittsburgh convention aptly illustrated the predicament of agstone producers by a simple illustration. "Suppose," said he, "we have a farmer who has $400 available. He is called on by fertilizer salesmen, by implement salesmen, automobile salesmen, radio equipment salesmen, etc.—all keen to get a piece of that farmer's $400 wad. The farmer is fully aware of all the virtues of agricultural limestone; theoretically he is fully sold. Nevertheless he may have been able to get along thus far without limestone; and it is easy, in the absence of a good salesman, for him to figure he can do without it for at least another year. Almost any business man will agree that under the circumstances the average farmer will 'fall for' the best selling argument, or the best salesman. So long as agricultural limestone is not represented by a salesman on the spot who has as great an urge to sell as a Ford salesman, we'll say, agstone is going to lose out in the competition for the farmer's dollar, or $400, as the case may be."

The rest of the sessions was devoted to talks by Prof. Roy W. Stone, assistant state geologist, Harrisburg, Pa., on "The Source of Our Profits" (which will be published in a subsequent issue of ROCK PRODUCTS), by Doctors Fletcher, of the U. S. Department of Agriculture, and McCall of the Maryland State Department of Agriculture, and by various members of the association.

President E. M. Lamkin (Kelley Island

E. M. Lamkin

Lime and Transport Co., Cleveland, Ohio) epitomized the spirit of the gathering when he said in his presidential address:

The agstone industry through this association has brought all its members to co-operate in educating the farmer to the value of its products, but we have not been alone in this educational work, as a lot of credit is due to the Department of Agriculture, the agricultural colleges, the ex-

perimental stations, farm bureaus and their county agents and a vote of thanks is due them.

Every member has been able to profit by the vision of leaders of the industry by coming in contact with other leaders who have ever broadened their vision.

There has been extraordinary faith in the product, a faith strengthened immeasurably by the careful and experienced study through co-operative efforts.

One of the most important things that has been ever-insistent is adherence to facts, or founding promotional work upon years of experiment and demonstration.

The association's personnel has been decidedly superior—a personnel untainted by unfair and questionable methods and this ought to be written in black-faced type of triple size. The individuals and companies that comprise this great association were welcome to become members, as they are noted for their fairness and determination to do the right thing, that which their conscience tells them is right and best and so, gentlemen, we have accomplished these things through this method, which I am sure you will agree with me is correct.

Two years ago the finances of this association were not in a satisfactory condition and one of the important things that we immediately did was to change our method of collecting dues. The members had in the past paid on the basis of so much per ton shipped. In 1922—to be more exact, it was January 28—we were successful in changing over from the old method to obligating each member to a certain amount that he was to pay during the ensuing year. A budget of our expenses was carefully arranged and we worked within that budget—in fact it left a balance at the termination of the year's business.

A Fight for Lower Freight Rates

At the beginning of 1922 indications were that the farmer was not going to buy a sufficient amount of liming materials to make our business profitable. We were then quoting them as low a price as it was possible for us to do, consistent with good business judgment. However, we felt that the railroads were charging excessive freight rates; therefore, at the expense of the association, we sent our secretary, A. P. Sandles, to Washington, D. C., to plead before the Interstate Commerce Commission for lower rates, which were eventually granted.

Meeting at Knoxville, Tenn.

On September 11 to 13, 1922, your president attended as representative of this association a meeting held by the American Society of Agronomy at the University of Tennessee at Knoxville, Tenn. There the agronomists of the country assembled for the purpose of discussing agriculture from a scientific standpoint. There were many papers read. However, I was pleased to note that invariably the discussion was on the use of lime for agriculture. This subject seemed to be foremost in their minds. It was gratifying to me to hear these learned gentlemen indorse our product. That should be added encouragement to all of us.

Accomplishments for the Year 1923

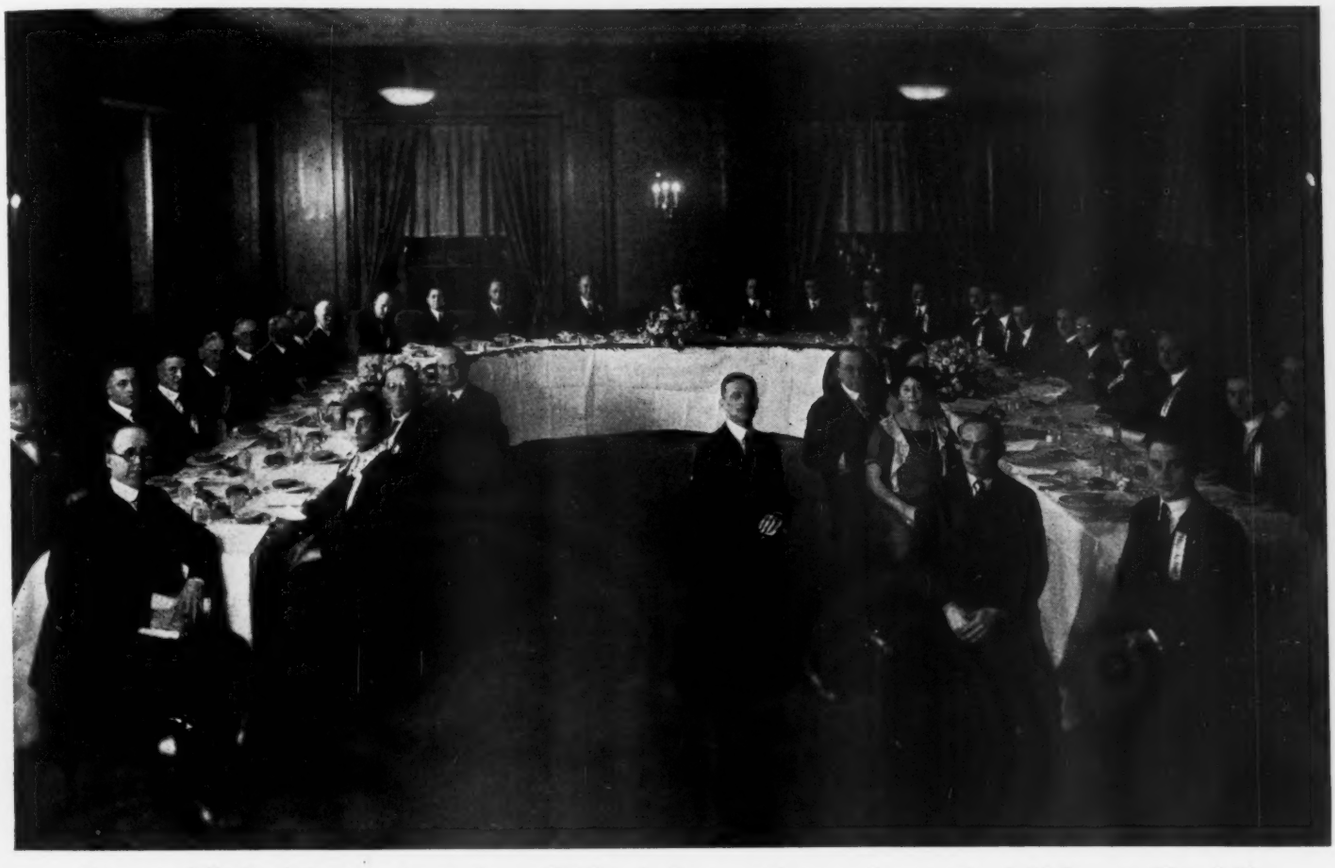
For the year 1923, this association accomplished even greater things than it did in previous years. Among them is the establishment of the Agstone Fellowship at Ohio State University and many thanks are due to the College of Agriculture, particularly Prof. Firman E. Bear, for his efforts and loyal support in seeing that this fellowship was the success that it has been. E. L. Broughton was selected as the fellow.

The Library Research and Review Service was established under the charge of Carl W. Vandervort.

In April, 1923, we established a national advertising campaign.

The Banquet

P. B. Reinhold, of Reinhold & Co., Pittsburgh, as master of ceremonies put on a "radio banquet" which everyone who had the good fortune to attend will ever remember as an evening of unique entertainment. Besides the "radio features," which it would be a sin to expose, there was a most enjoyable address by Thomas V. Hendricks, of the Adams Bag Co., Chagrin Falls, Ohio, and addresses and stories by nearly everyone present.



Banquet of National Agstone Association at Pittsburgh, Penn., at the annual convention held January 15 and 16

New Officers

Paul B. Reinhold, of Reinhold & Co., selling agents for the Carbon Limestone Co. and the Templeton Limestone Co., Pittsburgh, was elected president to succeed E. M. Lamkin, of the Kelley Island Lime and Transport Co., Cleveland, Ohio. Mr. Lamkin was elected chairman of the board of directors, succeeding J. C. King, of the Carbon Limestone Co., Youngstown, Ohio. Harry H. Brandon, of the Ohio Marble Co., Piqua, Ohio, was elected vice-president, and W. H. Margraf, Marble Cliff Quarries Co., Columbus, Ohio, treasurer. A. P. Sandles and Claude L. Clarke were appointed secretary and assistant secretary, respectively; were highly complimented on their good work, and had their salaries increased.

Practically all the activities of the association will be continued except the advertising which will stop when the present contracts expire in April.

Hints and Helps for Superintendents

Efficiency of a Screen

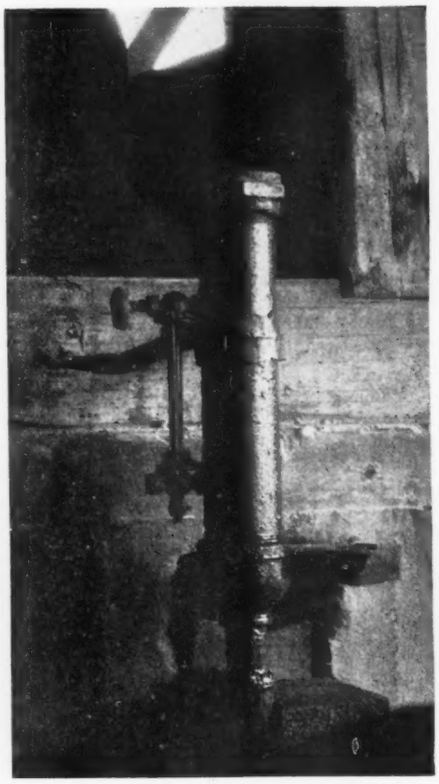
[The following from *Mining and Metallurgy* gives a new method of judging the efficiency of a screen. The "difficult" grains referred to are those which are very nearly the size of the screen opening. As everyone who has had experience with screening knows, the more of these grains contained in the feed, the harder the material is to screen.—Ed.]

THE quality of the work done by a screen should be judged entirely on what happens to the "difficult" grains in the feed. The results then would not be obscured by an excess of fine ore in the feed, almost instantly passed by any screen. The proportion of "difficult" grains really affect the efficiency of a screen more than does the percentage of true undersize present.

The writer suggests that the best available method for estimating the quality of the work done by a screen is as follows: Collect a sample of the feed and undersize. Size these samples on two testing sieves, the first clothed like the mill screen under investigation and the second with apertures somewhat smaller. Then the ore passing through the first sieve and held on the second will give the proportion of difficult grains, and the undersize of the second sieve plus its oversize, when divided by the total weight of the sample, will give the percentage of the true undersize present. If the weights of the mill-screen products are available, the weights of difficult grains in the feed and the undersize can then be calculated. The former divided by the latter will give the screen efficiency, expressed as a decimal. Should the weights of the mill-screen products be unknown, the efficiency can be calculated by the well-known formula for percentage extraction reconcentration.

Oil Gage for a Crusher

THE cut shows an oil gage on the base of one of the gyratory crushers at the plant of the American Crushed Rock Co.,



By watching the gage on the oil reservoir the crusher man knows when more oil is needed

which was described in the last issue. All of the crushers in the plant are fitted up in this way. By glancing at the oil gage the crusher man can tell at any time whether or not more oil is needed in the circulating system.

Setting Big Tanks by Water and Ice

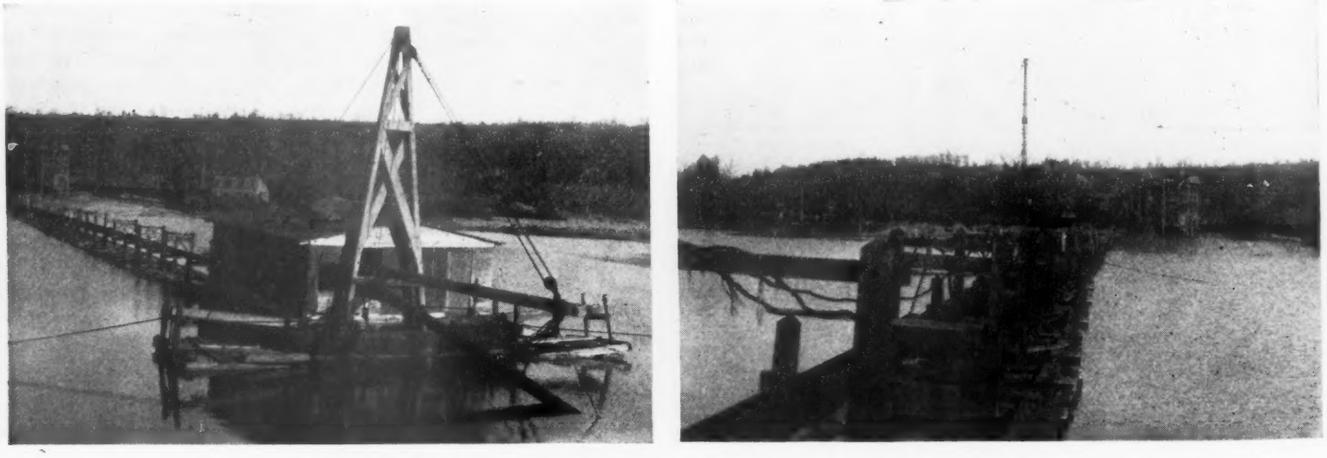
A METHOD of setting large tanks below ground which is said to have originated in the oil fields is to dig a hole for the tank and fill it with water. The tank is then rolled in and floats on the water. Then the water is pumped out and the tank allowed to settle to the foundations which have been prepared for it. The advantage of this method is that no strain is put on the tank in placing it on its foundations.

Cakes of ice were put to the same use not long ago by a California ice company during the construction of added plant facilities. In order to permit a 22½-ton tank to gradually settle on its permanent foundation, that company conceived the idea of placing the tank on blocks of ice which, in melting, carried the container to its footing without in any way wracking it.

Pontoon Line of Barrels

BARRELS are used to a considerable extent as pontoons to support a pipe line, and where they can be easily obtained and the water conditions are right they serve the purpose very well. The interesting thing about the pictures is that they show the substantial way in which the pontoon line has been constructed.

The essential feature of a good pontoon line is that the pontoons should be connected independently of the connections between the various lengths of pipe. Where the usual rubber sleeves have been used to connect the pipe, any pull on the



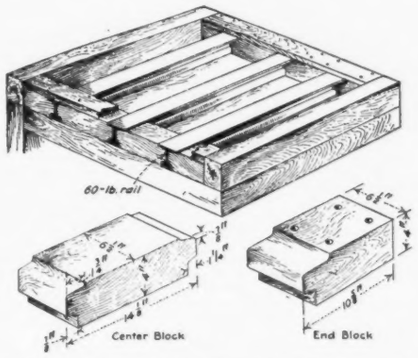
These pictures show a well-constructed pipe line supported on barrels

pontoon line will tend to pull the connection loose unless the pontoons themselves are connected.

The pictures were taken at the plant of the Succasunna Sand Co., Succasunna, N. J.

Grizzly Construction

THE cut shows a method of making a grizzly of rails, taken from the *Engineering and Mining Journal Press.* The particular grizzly shown is a small one for use in a chute, but the method of construction is adaptable to any size. Sixty



Method of making a grizzly from rails

pound rails are used, which are about as light as will stand the shock of dumping heavy pieces without bending.

The rails are placed bottom up. This makes the space at the top smaller than the space below which helps to prevent clogging and makes it easier to loosen a stone that has been caught. The head of the rail, however, does not make a good bearing surface so the rails are held in place by blocks cut to such a shape that they will fit up against the flange.

Rail grizzlies are much used in quarries especially where standard gage equipment is used for haulage. There are perhaps better shapes for grizzly bars, such as the wedge section and the arrow head, but the great advantage of the rail grizzly is that the material to construct and repair it is always at hand.

Sampling a Quarry

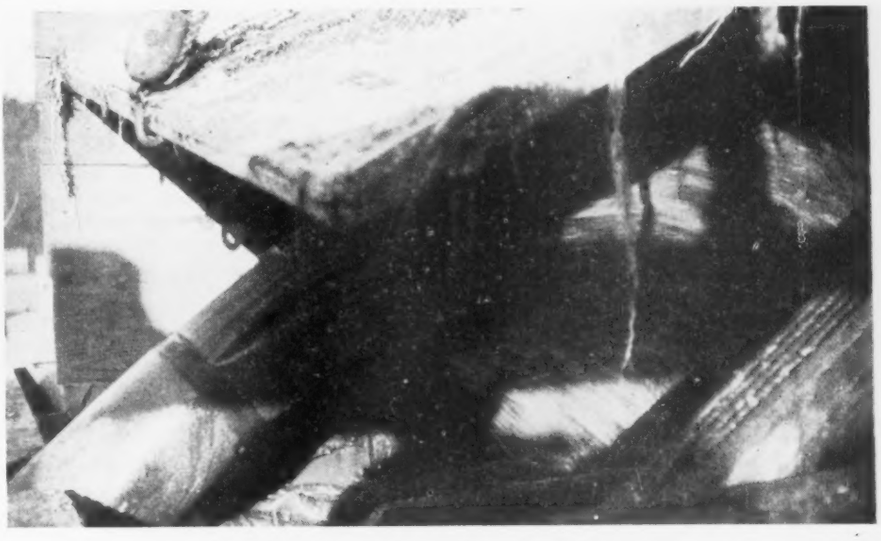
REGARDING the method of sampling a quarry to determine the suitability of the stone for highway material, John H. Bateman, director of the Michigan State Highway Laboratory says:

"General experience seems to teach us that a great deal of difficulty is usually obtained in securing representative samples of rock from ledges in quarries. As a first consideration rock should preferably be sampled by taking samples from all the different formations within the quarry. In some quarry examinations conducted for the Michigan state highway department the speaker has selected as high as 25 or 30 samples to determine the entire range of the material in a given quarry. Samples of ledge rock should consists of about 40 lb. of material larger than 1½ in. in size. At least one piece of material should be approximately 5x5x4 in. to enable cores to be drilled with a diamond drill for the hardness and toughness tests. Owing to the nature of the material these samples should preferably be enclosed in tight boxes rather than shipping them in sacks which usually become destroyed or damaged in shipment."

Inlet Box with Cover

THERE are a number of ways of putting the discharge of a suction dredge into a washing plant, and the arrangement shown here is a good one. The cover over the stream catches the splash and flying stones and throws them back on the grizzly, where they have a second chance to go through if they have bounced off the bars in the first place. The cover may be lifted to get at the grizzly.

The grizzly with this arrangement is set on a 45 deg. angle, the top leaning away from the discharge. In many plants the grizzly is placed with the top leaning toward the discharge so that the splash and fines will be thrown down with the oversize.



Inlet box for discharge from a dredge pump

Emergency Repair on a Dinkey

By F. J. MacDonald

Master Mechanic, Cobleskill, N. Y.

ONE day about 4 p. m. the piston rod on the 10x16 Porter dinkey broke near the cross head and that of course blew or broke the cylinder head and stud bolts.

There was no other method of getting the stone to the crusher. Many pickers were employed and a shutdown meant a serious delay in production. The first orders were to remove the old studs from the cylinder and a few had to be drilled out.

I had a good engine lathe and by a little search we found a piece of cold-rolled shafting which was only a little too large for the rod. I ordered a good 3-in. hardwood plank large enough to make a head. A good tough elm was found and trimmed hexagon or nearly round with a buzz saw. New longer stud bolts were ordered made. We found a piece of sheet steel large enough to make a plate over the wood and it was properly drilled for the stud bolts.

I rushed the turning of the piston rod and by working overtime, by 9 o'clock we had the repairs pretty well under way. All were on time the next morning and by rushing a little we drove the piston head home and headed it, drilled and cut the wedge slot for the cross head wedge and when sure all was ready the assembling began. Everything fitted as intended and a few minutes after 8 o'clock a fire was started and around 9 a. m. the dinkey was ready to move. It started off very nicely and soon operations were at normal again. Of course a new head was ordered and came to hand in due time but no special effort was made to change and if I remember right the wooden head was used for over two months with very satisfactory results.

Some tried to make fun of our wooden-headed dinkey but it did the business just the same and saved the company several hundred dollars which would otherwise have had to be paid for lost time.

[The above represents just the sort of information ROCK PRODUCTS desires from its readers. The ability and the courage to depart from the regular way of doing things and to use one's head in an emergency may save hundreds of dollars in lost time expenditure, and the employe who is able to do these things becomes proportionately more valuable to the company for whom he is working.—Editor.]

Portland Cement Output in 1923

Summary of Estimate of Output by Districts with the Regular December Report

THE statistics shown in the following tables issued by the Department of the Interior, and prepared under the direction of Ernest F. Burchard, of the Geological Survey, are based mainly on reports of producers of portland cement but in part on estimates. The estimates for December, 1923, were made necessary by the lack of returns from two plants. December production, shipments, and stocks were well above those of 1922 and the preliminary totals for 1923 show increases of 19.7 and 15.5 per cent respectively for production and shipments over the final totals for 1922.

Stocks of clinker, or unground cement, at the mills at the end of December, 1923, amounted to about 3,783,000 bbl. compared with 2,908,000 bbl. (revised) at the beginning of the month.

The Bureau of Foreign and Domestic Commerce, of the Department of Commerce, reports that the imports of hydraulic cement in November, 1923, amounted to 140,590 bbl., valued at $288,446. The total imports in 1922 amounted to 323,823 bbl., valued at $628,846. The imports in November were from Denmark, 44,389 bbl.; Norway, 32,379 bbl.; Belgium, 29,847 bbl.; Sweden, 13,059 bbl.; England, 12,755 bbl.; Canada: Quebec and Ontario provinces, 3282 bbl.; British Columbia and Yukon, 2014 bbl.; Prairie provinces, 357 bbl.; Maritime provinces, 6 bbl.; Germany, 2502 bbl. The imports were received in the following districts: Porto Rico, 45,402 bbl.; Los Angeles, 23,663 bbl.; Florida, 16,025 bbl.; New York, 13,672 bbl.; North Carolina, 12,511 bbl.; San Francisco, 10,503 bbl.; New Orleans, 9979 bbl.; South Carolina, 2931 bbl.; Washington, 2014 bbl.;

PRODUCTION, SHIPMENTS AND STOCKS OF FINISHED PORTLAND CEMENT, BY DISTRICTS, IN DECEMBER, 1922 AND 1923, AND STOCKS IN NOVEMBER, 1923, IN BARRELS

Commercial district	Production—December		Shipments—December		Stocks at end of December		Stocks at end of November
	1922	1923	1922	1923	1922*	1923	1923*
Eastern, Pa., N. J. & Md.	2,406,000	2,553,000	1,361,000	1,951,000	2,245,000	1,831,000	1,230,000
New York	489,000	557,000	263,000	402,000	517,000	653,000	498,000
Ohio, W'n Pa. & W. Va.	704,000	930,000	365,000	463,000	776,000	1,058,000	591,000
Michigan	501,000	536,000	155,000	295,000	622,000	710,000	469,000
Ill., Ind. & Ky.	1,190,000	1,444,000	497,000	687,000	1,415,000	1,551,000	795,000
Va., Tenn., Ala. & Ga.	460,000	708,000	455,000	550,000	162,000	452,000	293,000
Eastern Mo., Iowa & Minn.	1,009,000	1,018,000	285,000	374,000	1,452,000	1,855,000	1,211,000
W'n Mo., Neb., Kan. & Okla.	640,000	734,000	333,000	411,000	938,000	1,142,000	818,000
Texas	365,000	227,000	342,000	187,000	191,000	294,000	254,000
Colo. & Utah	62,000	133,000	68,000	90,000	176,000	277,000	234,000
Calif.	700,000	965,000	647,000	889,000	243,000	360,000	284,000
Ore., Wash. & Mont.	145,000	192,000	87,000	109,000	371,000	398,000	314,000
	8,671,000	9,997,000	4,858,000	6,408,000	9,108,000	10,581,000	6,991,000

*Revised.

SUMMARY OF ESTIMATES OF PRODUCTION, SHIPMENTS AND STOCKS OF FINISHED PORTLAND CEMENT IN 1923, BY DISTRICTS
(In thousands of barrels)

PRODUCTION

Commercial district	Jan.*	Feb.*	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1923	1922
Eastern Pa., New Jersey and Maryland	2,143	2,128	2,659	2,996	3,347	3,155	3,216	3,388	3,293	3,342	3,139	2,553	35,359	31,196
New York	311	345	400	514	683	648	654	720	726	731	677	557	6,966	5,923
Ohio, Western Pennsylvania and W. Virginia	671	742	891	1,145	1,393	1,263	1,284	1,295	1,327	1,266	1,262	930	13,469	10,753
Michigan	173	325	443	551	722	747	783	646	876	925	780	536	7,507	6,244
Illinois, Indiana and Kentucky	1,277	1,522	1,739	1,924	1,965	1,867	1,817	2,008	1,893	1,933	1,809	1,444	21,198	17,999
Virginia, Tennessee, Alabama and Georgia	542	465	546	573	643	647	626	681	779	838	831	708	7,879	5,954
Eastern, Missouri, Iowa and Minnesota	1,081	880	806	1,018	1,287	1,224	1,259	1,268	1,367	1,452	1,345	1,018	14,005	11,392
Western Missouri, Nebraska, Kans. and Okla.	380	517	665	855	902	866	956	1,026	1,009	979	921	734	9,810	8,026
Texas	372	312	371	360	375	334	397	385	367	332	348	227	4,180	3,629
Colorado and Utah	78	81	112	245	288	276	256	231	293	217	231	133	2,441	2,021
California	792	702	1,014	917	977	1,021	1,083	1,009	909	1,049	1,052	965	11,490	8,711
Oregon, Washington and Montana	170	191	234	261	328	334	289	310	270	286	208	192	3,073	2,942
	7,990	8,210	9,880	11,359	12,910	12,382	12,620	12,967	13,109	13,350	12,603	9,997	137,377	114,790

*Revised.

SHIPMENTS

Commercial district	Jan.*	Feb.*	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1923	1922
Eastern, Pa., New Jersey and Maryland	1,099	1,229	2,511	3,554	3,782	3,415	3,484	4,084	3,780	3,922	2,984	1,951	35,795	31,898
New York	128	154	376	624	729	676	730	823	788	864	559	402	6,853	6,195
Ohio, Western Pennsylvania and W. Virginia	405	550	982	1,247	1,424	1,359	1,442	1,606	1,495	1,412	830	463	13,215	11,041
Michigan	172	268	457	598	806	863	895	788	838	980	488	295	7,448	6,350
Illinois, Indiana and Kentucky	974	1,014	2,079	2,405	2,511	2,093	1,848	2,080	1,927	2,056	1,287	687	20,961	18,677
Virginia, Tennessee, Alabama and Georgia	482	425	535	635	672	663	583	684	731	844	806	550	7,610	6,159
Eastern Missouri, Iowa and Minnesota	555	837	958	1,197	1,472	1,447	1,544	1,620	1,408	1,448	758	374	13,618	11,657
Western Missouri, Nebraska, Kans. and Okla.	433	416	681	940	856	768	1,062	1,254	1,001	935	800	411	9,557	7,967
Texas	353	251	370	347	424	368	411	413	305	326	320	187	4,075	3,730
Colorado and Utah	86	89	133	218	274	276	276	275	244	206	171	90	2,338	2,063
California	825	767	1,011	924	977	1,000	1,069	958	874	1,021	1,079	889	11,394	9,042
Oregon, Washington and Montana	116	90	233	265	330	379	368	386	307	271	169	109	3,023	2,922
	5,628	6,090	10,326	12,954	14,257	13,307	13,712	14,971	13,698	14,285	10,251	6,408	135,887	117,701

*Revised.

STOCKS AT END OF EACH MONTH

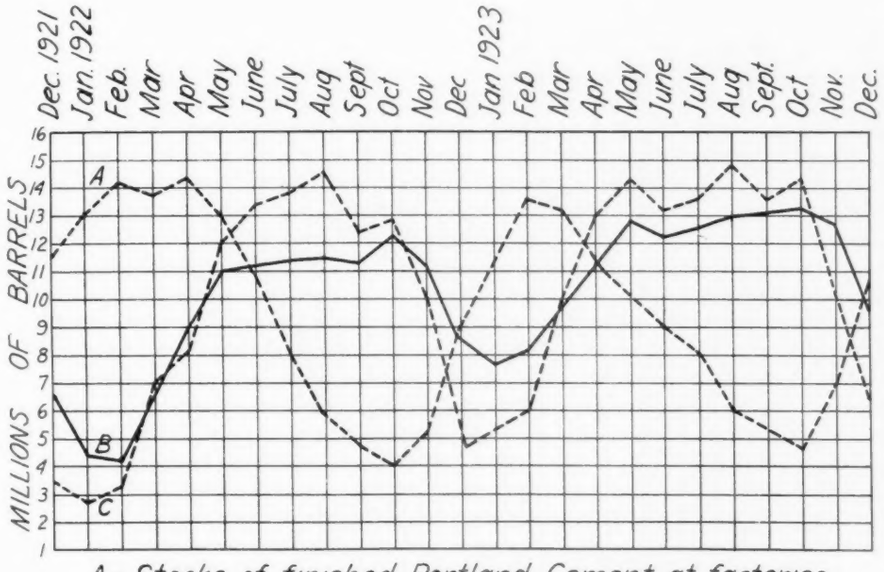
Commercial district	Jan.*	Feb.*	Mar.*	Apr.*	May*	June*	July*	Aug.*	Sept.*	Oct.*	Nov.*	Dec.
Eastern Pennsylvania, New Jersey and Maryland	3,289	4,188	4,336	3,778	3,342	3,082	2,814	2,118	1,635	1,075	1,230	1,831
New York	699	890	914	804	759	730	655	552	513	381	498	653
Ohio, Western Pennsylvania and West Virginia	1,043	1,235	1,144	1,042	1,011	915	762	469	304	159	591	1,058
Michigan	632	689	671	640	549	433	320	185	232	178	469	710
Illinois, Indiana and Kentucky	1,717	2,224	1,786	1,301	755	529	497	428	395	272	795	1,551
Virginia, Tennessee, Alabama and Georgia	222	262	275	213	208	191	234	231	279	272	293	452
Eastern Missouri, Iowa and Minnesota	1,977	2,021	1,870	1,694	1,522	1,299	1,014	662	622	625	1,211	1,855
Western Missouri, Nebraska, Kansas and Oklahoma	885	986	968	883	929	978	873	645	652	696	818	1,142
Texas	210	271	272	284	235	201	187	159	221	227	254	294
Colorado and Utah	169	161	136	163	178	178	159	113	163	174	234	277
California	209	144	146	139	136	156	169	220	256	277	284	360
Oregon, Washington and Montana	425	525	527	522	520	476	397	298	261	276	314	398
	11,477	13,596	13,045	11,463	10,144	9,168	8,081	6,080	5,533	4,612	6,991	10,581

*Revised.

PRODUCTION, SHIPMENTS AND STOCKS OF FINISHED PORTLAND CEMENT BY MONTHS IN 1922 AND 1923, IN BARRELS

Month	Production 1922	Production 1923	Shipments 1922	Shipments 1923	Stocks at end of month 1922*	Stocks at end of month 1923
January	*4,291,000	*7,990,000	*2,931,000	*5,628,000	13,316,000	*11,477,000
February	4,278,000	*8,210,000	3,285,000	*6,090,000	14,142,000	*13,596,000
March	6,685,000	9,880,000	7,002,000	10,326,000	11,848,000	*13,045,000
First quarter	15,254,000	26,080,000	13,218,000	22,044,000	.....	.....
April	9,243,000	11,359,000	8,592,000	12,954,000	14,470,000	*11,463,000
May	11,176,000	12,910,000	12,749,000	14,257,000	12,893,000	*10,144,000
June	11,245,000	12,382,000	13,470,000	13,307,000	10,718,000	*9,168,000
Second quarter	31,664,000	36,651,000	34,811,000	40,518,000	.....	.....
July	11,557,000	12,620,000	13,850,000	13,712,000	8,433,000	*8,081,000
August	11,664,000	12,967,000	14,361,000	14,971,000	5,746,000	*6,080,000
September	11,424,000	13,109,000	12,444,000	13,698,000	4,724,000	*5,533,000
Third quarter	34,645,000	38,696,000	40,655,000	42,381,000	.....	.....
October	12,287,000	13,350,000	12,854,000	14,285,000	4,149,000	*4,612,000
November	11,349,000	12,603,000	10,167,000	10,251,000	5,320,000	*6,991,000
December	8,671,000	9,997,000	4,858,000	6,408,000	9,108,000	10,581,000
Fourth quarter	32,307,000	35,950,000	27,879,000	30,944,000	.....	.....
Preliminary total	113,870,000	137,377,000	116,563,000	135,887,000	.....	.....
Amount of under estimate..	919,984	.....	1,138,216	.....	.....	.....
Final total	114,789,984	.....	117,701,216	.....	.....	.....

*Revised.



A - Stocks of finished Portland Cement at factories.
B - Production of finished Portland Cement.
C - Shipments of finished Portland Cement from factories.

Cement Production and Shipment, with Stock on Hand, 1922, 1923

Massachusetts, 1013 bbl.; Vermont, 780 bbl.; other districts, 2097 bbl.

The exports of hydraulic cement in November, 1923, were 85,743 bbl., valued at $245,739, of which was sent to Cuba, 40,996 bbl.; to the other West Indies, 5650 bbl.; South America, 20,922 bbl.; Mexico, 12,587 bbl.; Central America, 2004 bbl.; Canada, 617 bbl., and to other countries, 2967 bbl.

The statistics of imports and exports of hydraulic cement in December, 1923, are not available.

IMPORTS AND EXPORTS OF HYDRAULIC CEMENT, BY MONTHS, IN 1922 AND 1923, IN BARRELS*

Month	Imports 1922	Imports 1923	Exports 1922	Exports 1923
January	17,039	71,686	70,725	73,169
February	5,157	20,529	82,421	88,624
March	1,597	66,521	103,556	98,861
April	10,855	76,416	75,412	85,662
May	2,524	88,480	100,068	103,634
June	14,198	111,559	96,263	77,203
July	957	286,106	119,491	82,774
August	56,757	323,948	105,156	73,201
September	†42,641	215,785	78,615	77,121
October	‡65,228	172,051	80,402	74,302
November	61,010	140,590	108,798	85,743
December	45,860	(§)	106,938	(§)
	323,823	.....	1,127,845	.....

*Compiled from records of the Bureau of Foreign and Domestic Commerce. §Imports and exports in December, 1923, not available. †Covers period September 1-21. Imports September 22-30 included with October. ‡Includes imports period September 22-30.

A plan of road building in the province of British Columbia, Canada, which will involve the expenditure of about $20,000,000 during the next five years, has been outlined by Hon. W. H. Sutherland, minister of public works.

Good Road Gravel Must Have No Clay if Traffic Is Heavy

IT is being pointed out by highway departments (see report of Indiana Sand and Gravel Convention in ROCK PRODUCTS for December 1), that gravel roads to stand up under modern traffic must not contain the clay binder that is recommended by the old text books on road building. The only satisfactory binder for use with modern roads is the rock dust produced in crushing the larger pieces of gravel or added from another source. This is borne out by the following item taken from the Houston, Texas, *Press:*

Granite gravel, with no mud in it, can be obtained from Llano, Tex., for $2.37½ a cubic yard. At present the city is paying $2.07½ for clay gravel that comes from Columbus and nearer points.

The freight item is the big cost of gravel. The clean, granite gravel that can be obtained from Llano costs loaded on the cars there only 37½c a yard. But the freight to Houston is $2 a yard.

The city is paying 57½c a yard for the clay gravel it gets from Columbus, but the freight rate is only $1.50 a yard.

Complaints have been made in regard to gravel the city street department has been putting on streets recently.

"I never saw some of the streets in such condition as they are now, or so many complaints and it is due to this clay gravel," Commissioner Allie Anderson has reported.

Spent on Good Roads in 1923

ACCORDING to the *Sand and Gravel Bulletin*, one-half of a billion dollars represents the total of federal and state appropriations for highway construction during 1923. The time is not far distant when one year's road expenditures in this country will reach $1,000,000,000. There are 38 states which alone have a total of work now under contract of nearly $260,000,000. This is aside from any city, county, township or improvement board work.

The work by states actually under contract is given as follows:

North Carolina, $37,497,000; Ohio, $30,000,000; Missouri, $29,233,000; Illinois, $23,400,000; West Virginia, $15,000,000; Michigan, $13,836,000; Pennsylvania, $12,259,000; Iowa, $9,000,000; Wisconsin, $9,000,000; Alabama, $8,584,000; Maine, $8,500,000; New Jersey, $8,500,000; Colorado, $8,345,000; South Carolina, $6,023,000; Mississippi, $6,000,000; Wyoming, $4,900,000; Maryland, $4,265,000; Washington, $3,000,000; Delaware, $2,600,000; Idaho, $2,175,000; Louisiana, $2,000,000; North Dakota, $1,800,000; Massachusetts, $1,358,000; California, $1,343,000; Oregon, $1,335,000; Arizona, $1,270,000; Nebraska, $1,218,000; Minnesota, $1,200,000; Kentucky, $1,000,000; Utah, $1,000,000; Rhode Island, $887,000; Arkansas, $625,000; Vermont, $600,000; Oklahoma, $600,000; South Dakota, $350,000; Nevada, $300,000; New Mexico, $30,000; and New Hampshire, $100,000.

Growth of the International Cement Co.

THE following record of the growth of the International Cement Co. during the past four years is reprinted from *Financial America*, a New York financial publication:

In conjunction with the anticipated record earnings for 1923 of about $6.20 a share on the common stock, it is interesting to note the progress made in the affairs of the International Cement Co. during the last four years. Not only has the company's financial position been strengthened to a remarkable degree but actual and potential production has been increased to the point where the company now occupies a unique standing in the industry.

As of December 31, 1919, current assets amounted to a little over $3,000,000. On September 30 last they totaled $5,217,000. In the same period of time, current liabilities decreased from $1,945,000 to $790,000, resulting in an increase in net current assets of more than $3,300,000. Similarly, plant and property account less reserve for depreciation increased from $8,773,000 to $12,081,000, while deferred charges decreased nearly $160,000.

During that time, the funded debt of subsidiaries was decreased from over $2,175,000 to $352,000, while capital stock of subsidiaries was lowered from approximately $1,193,000 to less than $70,000.

It is noteworthy that the increase in working capital of over $3,300,000 together with the increase in plant and fixed property assets of a similar amount was accomplished with a net increase in capitalization of only $2,975,000. In other words, the increase in assets has been more than double the net increase in capitalization. From December 31, 1919, to September 30, 1923, earned surplus increased from $2203 to $3,075,548. The company has never carried any item of good will in its balance sheet.

In 1919 the company owned five plants, sold 1,543,336 bbl. of cement and had a productive capacity of 2,800,000 bbl. In 1923 the number of plants had been increased to seven, approximately 5,000,000 bbl. were sold, and the company had a productive capacity of 5,400,000 bbl. It is significant that in spite of the fact that sales in that period increased about 225 per cent, funded debt was decreased 84 per cent, while share capital was expanded but 70 per cent.

One of the reasons for International's excellent earning capacity, which is unusual in the cement industry, is that all of its seven plants are strategically located close to consuming markets where the product is distributed. Furthermore, with plants located in Cuba, the Argentine and Uruguay, the severe competition, inherent in the industry in this country, is to a large extent eliminated.

A high standard of manufacturing efficiency is maintained in all the company's plants and in this connection it is interesting to note that since organization International has expended more than $6,500,000 in the aquisition, modernization and enlargement of its plants. This work has been largely financed out of earnings.

The outlook for 1924 appears bright. With every indication of continued sound conditions in the industry it seems probable that the company will market 6,000,000 bbl. of cement during the current year, while potential capacity should be increased to 500,000 bbl. beyond that figure.

Analysis of the Portland Cement Industry

THE *Financial America* of New York City, January 4, 1924, carries the following analysis of the portland cement industry:

"A review of the cement industry for 1923 reveals one outstanding feature—that in spite of the fact that both production and shipments of portland cement were greater than ever before, the price of this product was actually reduced. It is significant that in the first 11 months of the year, production amounted to nearly 127,000,000 bbl., an increase of 12,000,000 over the whole of 1922, the previous record year. Similarly, shipments up to December 1 were more than 11,000,000 bbl. in excess of the amount shipped during the entire previous year, the figure for the 11 months of 1923 being more than 129,000,000 bbl.

"As of November 1, last, the large eastern manufacturers reduced the price of their product from $2.00 to $1.85 a barrel at the mills and from $2.70 to $2.55 a barrel f.o.b. New York dock. That marked the first price change since the fall of 1922. It would appear, therefore, that the various charges of profiteering which have been made against the industry are not justified. On the contrary, the severe competition inherent in the industry is said to have been responsible for the price decline.

"Another interesting light on the situation and one which further dispells the attacks on the industry is that at the end of November the stocks of cement at the mills amounted to nearly 7,000,000 bbl., an increase of approximately 30 per cent over the figure at the corresponding time in 1922. This would seem to conclusively indicate that demand has lagged behind supply, rather than the reverse, of which the industry has frequently been accused.

"The unparalled building boom was directly responsible for the record production. The record shipments were largely the result of more efficient handling by the railroads than ever before together with the fact that consumers more rigidly adhered to the policy of placing their orders in the months of light demand.

"Another thing was definitely proved in 1923—that the actual and potential producing capacity of the cement industry is adequate to supply an even vastly greater demand than has been placed upon it during the last 12 months. Early in the year total capacity was estimated at about 146,000,000 bbl. Because of various plant additions, it is now probable that the industry could satisfactorily answer the demand for 160,000,000 bbl. and should such an enormous demand ever arise, authorities believe that that figure could be materially increased.

"Present indications are that 1924 will be a busy if not a profitable year for the industry. That the present activity in building will be continued, at least for several months, seems to be a certainty and, barring an unexpected business depression, the natural growth of the country should assure as great a production in 1924 as was witnessed a year earlier."

Monarch Cement Co. Not Sold

ROCK PRODUCTS, in common with many other trade publications, printed a report from a Wichita, Kan., paper in its issue of January 12, which said that the Monarch Cement Co.'s plant had been sold. The information seemed to some from a reliable source and came to this office too late to be verified. It appears that the information was incorrect for the Monarch Cement Co. writes as follows:

Editor ROCK PRODUCTS—Recently an announcement was made in a Wichita, Kan., daily and reprinted by some of the trade journals to the effect that the Cement Securities Co. of Denver, Colo., had purchased the control of the stock of the Monarch Cement Co.

Some of the stockholders of the Monarch Cement Co. who represented the control offered their stock for sale, but did not sell and have now declined to negotiate further; in fact the majority of stock is in the hands of the management who will not sell but will continue to produce the well-known brand "Monarch."

With increased production, storage, and switching connection with the Missouri, Kansas and Texas railroad, their customers will be better served.

Yours truly,

THE MONARCH CEMENT CO.,
C. A. Brooke, Sales Manager.

Michigan State Seeks Reduction In Road-Material Freight

A REDUCTION in the present freight rates on all highway construction materials will be asked of the Interstate Commerce Commission by the state of Michigan as one means of further reducing the cost of highway building to the people. Governor Groesbeck has stated that the state would appear before the Federal Commission and vigorously prosecute this matter.

Clark M. Moore, Well Known in the Cement Industry, Is Dead

CLARK M. MOORE, 49 years old, vice-president of the International Cement Corporation of New York City and former general sales manager for the Cement Securities Co. of Denver, died Dec. 19 after an illness lasting a year and a half, at his residence in Denver, Colo.

Mr. Moore was a national figure in the cement industry. Previous to his departure from Denver in September, 1919, to take up more important duties in New York, he was known to almost every man in the Rocky Mountain region connected with the lumber and cement business.

Born at Hiawatha, Kan., March 4, 1874, he engaged in the retail lumber business at Las Vegas, N. M., Trinidad, Colo., and later, with his brother, Joseph E. Moore, in Denver, under the firm name of the Moore Lumber Company.

After he left Trinidad, he came to Denver. For a time he was associated with the McPhee & McGinnity Co. here. In 1911 he became general sales manager for the Cement Securities Co., which position he held until 1919, when he accepted the call to a position of national and even international prominence in the cement industry.

For eight or ten months after he left Denver, Mr. Moore looked after big cement interests in South America, particularly in Montevideo and Buenos Aires. Then he returned to New York as vice-president of the International Cement Corp., which position he held until his death, despite his illness, which became more serious last March and necessitated his return to Denver for a complete rest. Since March he had been confined to his home.

Mr. Moore was a member of the Denver Athletic Club, the Denver Civic and Commercial Association and the Oklahoma City Chamber of Commerce.

1924 Marks Centennial of Cement Industry

OLD RECORDS on file in the British patent office show that in 1824—just one hundred years ago—an English bricklayer named Joseph Aspdin was awarded a patent for a material he called "portland cement." At that time a number of men were engaged in experiments in an effort to produce a cement superior to the natural cements then in use. As far back as 1756 an English engineer named John Smeaton had discovered that an impure limestone containing a certain amount of clayey matter possessed decided hydraulic properties when burned. Aspdin's contribution was his discovery of the value of taking proper proportions of different ingredients and then pulverizing and thoroughly mixing them before they were burned into clinker, which later was finely ground. He called his material "portland" cement because when it hardened it resembled a building stone quarried on the Isle of Portland.

Although Aspdin's invention was brought out in 1824, it was not until 1872 that the portland cement industry started in the United States. Of course, natural cements had been used here for years, and in the late sixties imported portland cement was gaining a strong foothold in the American market. In 1872 David O. Saylor established a plant for the manufacture of portland cement at Coplay, Pennsylvania, and so far as can be ascertained this is the first plant of its kind to be started in this country. Within a few years other plants were built at South Bend, Indiana; Kalamazoo, Michigan, and various parts of the East.

Prosperity at Cape Girardeau

NORMAN L. HELY, proprietor of the Edward Hely Stone Co., Cape Girardeau, Mo., writes ROCK PRODUCTS:

"In 1923 we saw our greatest production; in fact, it exceeded our best year of the past by approximately 45 per cent, having crushed and sold 252,102 tons of crushed stone. Approximately one-half of this was supplied for road and general building purposes for southeast Missouri and northeast Arkansas and the balance to the Marquette Cement Manufacturing Co. plant, located here, as we supply them with all their raw material for the manufacture of cement. They are planning to increase the capacity of their plant very materially through the development work in the next two years which will require a great deal larger tonnage of stone for their raw material. Due to this fact they are erecting their own rock crusher and expect to crush a large percentage of their own stone for cement manufacturing purposes. This will allow us in the future to put more of our stone on the market to supply our growing demand.

"As our stone is of an exceptionally hard, high quality limestone it is in great demand for building and road purposes, its quality causing it to be demanded against local competition at rather distant points for road and street purposes. We have had a demand for several years which is gradually increasing for stone to be shipped to St. Louis for high-class streets.

"We are getting our quarry in such a high state of development that we expect to produce 300,000 tons of stone in 1924, which we feel will amply take care of all the requirements in our district.

"We have for years been selling our product on the basis of a cubic yard but our trade has demanded a change from this, so, effective January 1, all shipments will be made on a ton basis, railroad weights to govern."

Remember That the Federal-Aid Road Law May Be Changed This Year

ROCK PRODUCTS in a recent issue called attention to the fact that some opposition to the Federal-Aid road law was developing. As there is no national legislation of more importance to the rock products industries this paper believes that all of its readers should bear the fact in mind and act accordingly. Concerning this the *Engineering News-Record* says editorially:

Engineers and contractors need to keep in mind that the Congress now in session has before it the task of continuing or, as may be considered, of changing the federal-aid road law and also of providing appropriations, if federal aid is to be available beyond the present fiscal year. Acting officially in convention the Association of State Highway Officials has asked for an allotment to the states of $100,000,000 a year of federal aid for a period of three years from June 30, 1925. This amount is not too great for the states to absorb if they get about the task of building roads. Just now their delay, or, more accurately, the delay of some, in matching the federal-aid funds and placing work under contract is furnishing the best excuse that Congress will have that appropriations may be reduced and that the present law needs changing. There will be other influences to swing federal activity in road building to a separate system of national highways, to sectional highway systems or to some other object than is contemplated in the present federal aid law. *Direction of Congress has to come from engineers and contractors. They are organized to furnish it.* The general public, though wanting roads and aid in roadbuilding, may not be expected to take direct action. Contractors' associations and engineers' societies have the important duty this winter of seeing that our present efficient plan of organization for federal-aid road construction is not changed without real reason and that the present liberal appropriations for roadbuilding are continued.

Prospects for Rock Phosphate for 1924 Are Better

THE following from a Baltimore Correspondent of the Philadelphia *Public Ledger* is an example of several opinions which predict a heavier sale of fertilizer for 1924 and consequently a better market for phosphate rock:

Increased prosperity in the South is reflected in the fertilizer industry, which is believed to have turned the corner after one of the longest and most distastrous depressions in the history of the trade.

Prospects for 1924 are said to be encouraging, as the demand for fertilizers promises to equal that of 1914. On account of the high prices of cotton larger acreage and larger consumption are assured.

The South alone consumes about two-thirds of the fertilizers used in this country, according to an authority, and the planters in that section have seen the worst of their financial difficulties.

A large part of the cotton belt is reported to be undernourished, some sections having had insufficient fertilizers for several years. Actual tonnage used last season, totaling about 4,000,000, was 800,000 more than the 1922 period, but 995,224 under 1914.

Quarried from Life

By Liman Sandrock

The Rise of Martin Madden

OUR fellow biographer Samuel G. Blythe recently wrote a wonderfully compelling human-interest story in the *Saturday Evening Post* about Martin Barnaby Madden—statesman, Congressman, watchdog of the Treasury and, what is equally interesting to us, an owner and creator of large quarry interests, a business he learned from the water-pail up.

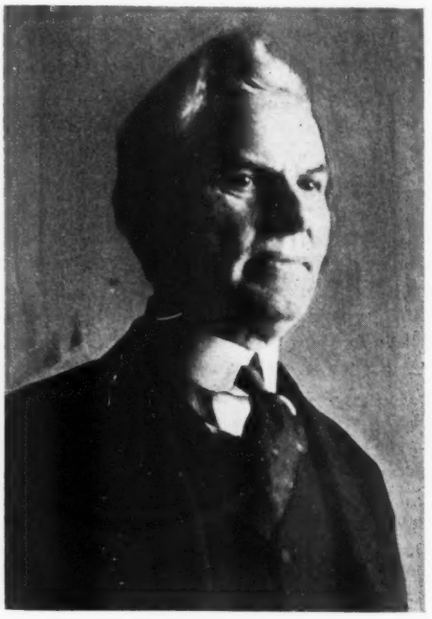
Don't for one moment believe that Sam has gotten away away with something new—that he has turned a furrow in an unplowed literary field. Nossir! We saw the hero first, and ROCK PRODUCTS for March 25, 1922, had an article about Mr. Madden entitled "From Quarry Pit to Congressman."

Now, don't get us wrong. We are not attempting to belittle Sam's able efforts to pay Congressman Madden a well-deserved tribute. Sam is just as good a biographer as we are—we admit it—and the *Satiddy Ev'nin' Post* is just as well known and as popular in its own way as ROCK PRODUCTS is. We also admit that this *Post* feller has gathered unto himself a few more details than we had time to collect in our previous article.

At ten years of age Martin Madden was a water boy in a quarry near Chicago—in 1865. In this year of grace 1924, as head of the Committee of Appropriations of the national House of Representatives he handles his pail in the interests of the Nation's taxpayers and dips out millions and millions of freshly minted dollars from the would-be bills of over-zealous members who would much rather assist their home constituents than worry over the nation at large. Saving a million dollars for Uncle Sam is to Martin Madden no more than you saving your cigar coupons.

Many of us folks believe that we could run the government much better than Coolidge, Mellon & Co., if its fiscal affairs were entrusted to us rather than to lawyers and politicians. Yes? Listen, a politician is not necessarily a failure if he combines the qualities of both business man and politician. Somehow, under our present system, we have to combine these qualities if we would succeed in getting anywhere. His business training enables him to go after and get the big things for us Common Peepul, and his political training aids him in the knowledge that he must salve his home constituents and make them satisfied with a bit of "improvements" in their own district—and then let the country at large get the main benefits. This is where we need the politician and our contention is not in any way upset when we insist that the combination is a good one and practical.

Martin Madden is a successful business man and a wise politician. As we have said, he once stood watch at the waterpail in a quarry. He struggled bravely for an education—and got it; step by step he rose to positions of responsibilty and trust in the stone business until he reached the top—and there he stuck, with a business of his own. He came to be president of the Western Stone Co., a bank director, president of the Illinois Manufacturers Association, vice-president of the Builders and Traders Exchange of Chicago, among other responsibilities. This is the business side of Mr. Madden's career.



Martin B. Madden

The political? Well, he started in early and became a member of the Republican City Committee of Chicago; a member of the Cook County Committee, and was otherwise active in state, county, and city politics.

It was in 1897 that Martin Madden was fired with ambition to enter Congress as a member of the upper house. Now, Illinois politics have always been a trifle peculiar, let us call it. Even today we feel Small about some things, and we're still shouting our grievances Lowden emphatic—if you get what we mean. Sam Blythe even goes so far as to call Illinois the Sucker State, and even outside our prairie boundaries there are critics who have misnamed us in our hearing.

In 1905 Mr. Madden went to Congress from the First Illinois District—and he has remained there right up to now! His old opponents are all politically or otherwise dead, and Martin B. Madden is chairman of the Appropriations Committee of the House of Representatives. Have you ever stopped to realize the magnitude of this particular job? Did you heretofore know that an ex-water boy from a stone quarry was the great say-so of this powerful committee?

Madden is the surgeon who wielded the wicked scalpel when he cut a hundred million dollars from the proposed budget of the United States Shipping Board—and the operation was an unqualified success, with the recovery of the patient. It must have made "a beautiful wound," as the surgeons have it. But think of the pain given the patient by the removal of this tidy little wad. Our friend Blythe says that a good many people still live who can remember when it took only three times this amount to run the government of these United States.

So it's easy to see why Madden has made such a success of his job as a sort of watchdog of the Treasury. He has been a business man all of his mature life; he acquired his political training in a veritable hotbed of politica—in Chicago; he soon learned just what can be done with this sort of equipment for a business Congressman—and he knows just how far Congressman Hoakum will go if he is not watched.

There have been many holders of the office of chairman of this Appropriation Committee, and Sam says that Martin Madden has been the peer of them all in his intelligent administration of its work.

You see, Mr. Madden first gained his experience with the two-hundred-thousand-dollar patriots who would willingly give up the other fellow's life, if need be, to save the country from the demnition bowwows—and therefore it was afterward easy for him to deal successfully with the two-hundred-million-dollar patriots in Washington. Their several purposes were the same in degree.

"Show me!" is Madden's stony reply to those who would ask for seaports on the Des Plaines River or a two-million-dollar post office in Oak Park. He knows that you can walk dryshod across the Des Plaines in summertime, and that a letter mailed in Chicago will in two or three days reach Oak Park if the local postman is speeded up a bit.

The quarry boy training was the groundwork of all this accomplishment, and again bears out our contention that in the rock products industry there is fine material for any post within the gift of the people.

Some day we will ask you to help us in making up a ticket composed of men in our industry for all the national offices within the gift of the Peepul—and perhaps we will also add our recommendations for some of the national commissions—including the I. C. C.

Editorial Comment

Do Conventions Pay the Public?

Newspaper and magazine editors are asking this question, and some of them seem to think it doubtful that the public (which ultimately pays the bills) gets its money's worth in conventions. ROCK PRODUCTS, after the convention experience of the past week, is willing to go on record that the public gets its money back from conventions 100 per cent.

Every enterprising producer reads his trade paper—advertisements and editorial matter—and keeps in touch with the devolpments in his industry. Suppose he reads that John Smith of Blankville has built a new kind of bin or installed a new type of crusher. The information may leave him cold unless he knows Smith. But if he has met Smith at the convention and remembers him as a keen level-headed business man, he will think the new bin or crusher is worth looking into. From this start he may improve his plant and his work and the public will get lower prices, better service or improved quality. Progress in an industry might come anyway but it comes faster because of conventions.

But the big effect is the effect on the individual. A man gets "stale" meeting only his competitors in the business, with whom he cannot talk too freely no matter how friendly he may feel toward them. At the convention he meets those who are doing the same work, swaps experience, gets hints and helps that are invaluable and comes home full of pep and enthusiasm for the next year's work. And he has a feeling that he is a part of a great and important industry that is rendering real service to the public.

All this means better work, better service to his customers, better quality in his product. It is in this way that the public gets its return on the money and gets it to the full worth and more of every dollar so invested.

Winter Construction

Winter construction is having considerable of a boom in New York and other eastern cities, according to the New York *Times* and other papers. It is pointed out that the chemist and engineer have overcome the difficulties of building in winter, until now it is as safe, comfortable and convenient as summertime work. One concrete instance is given, that of a building estimated to cost $750,000, on which $87,000 was saved by building it last winter instead of waiting until spring. This is as it should be, for our modern industrial life is fast overcoming the handicaps of weather and the change of seasons in every line of industry. The quarry and the sand pit still find it more difficult to work in winter than in summer, but each year the tendency is to extend the number of working days and to provide storage to carry deliveries for the short time in which work cannot go on. Steadiness of output and relief from "peaks and valleys," due to seasonal and economic ups and downs, is the goal toward which we all are turning. And there is no more hopeful tendency in our economic life than our readiness to challlenge weather and climate.

More Hydro-Electric Power

Rock products industries are considerable users of power and especially of electric power. It will gratify them to learn that not only was there a considerable increase in hydro-electric power in 1923, but that a much larger increase will be made in 1924. At the beginning of last year 12,000,000 hp. was generated by water. This was increased by a million horsepower in 1923 and 2,700,000 hp. is now under construction. Much of this is in localities where it will not particularly affect the rock products industries, but the prospects are that future developments will not be confined to the far West and one or two Eastern localities. For the super-power plan that has been looked on as a dream is coming in a way that few of us realize. Networks of power lines are constantly linking up power units, and as high voltage transmission becomes more common we may expect these networks to cover larger areas.

German Architects and Concrete

In America (we are the world's most conservative people) architects have stuck pretty closely to the old forms in making reinforced concrete structures. The result has been that, while we have erected nothing that is so novel as to be startling, we have at least erected little that would offend good taste. But foreign architects, especially the Germans, who have only begun to use reinforced concrete on a large scale in recent years, seem unable to resist the fascination of working in a new material. It is a plastic stone and there is something of the same joy in working in it that children and some grown people, find in making sand castles on the seashore. Just now the German mind, wearied with war and political strife, is turning to the bizarre and even the weird forms of decadence in art, literature and moving pictures. It is not surprising that some of the structures which have been recently erected over there should resemble those in "The Cabinet of Dr. Calgarri." But all such work is not a total loss. Both architect and engineer are learning more of the medium in which they work and the lessons thus learned, in a period of storm and stress, will find their fullest application in a more normal time.

Traffic and Transportation

By EDWIN BROOKER, Consulting Transportation and Traffic Expert,
Munsey Building, Washington, D. C.

Proposed Changes in Rates

THE following are the latest proposed changes in freight rates up to the week beginning January 21:

Central Freight Association

7762. Crushed Stone. Lima, Ohio, to Sharonville, Mauds, and Gano, Ohio. Present 16½ cents; proposed, $1 per net ton.

7781. Lime. Marble Cliff, Ohio, to C. F. A. territory. Present, classification basis; proposed, illustrations as per Exhibit A, attached.

Exhibit "A"

Destination	Proposed rate on lime C. L., from Marble Cliff, Ohio
Akron, Ohio	$0.10½
Bellaire, Ohio	.13½
Buffalo, N. Y.	.17½
Chester, W. Va.	.16½
Crooksville, Ohio	.08½
East St. Louis, Ill.	.23½
Glen Roy, Ohio	.11
Holmesville, Ohio	.09½
Kimball, Ohio	.10½
McArthur, Ohio	.10½
Mingo Junction, Ohio	.13½
New Lexington, Ohio	.09
Oil City, Penn.	.17½
Ridgeway, Ohio	.09
Shirley, Ind.	.14½
Tipton, Ind.	.14½
Warsaw Junction, Ohio	.11½
Zanesville, Ohio	.09

7805. Lime. Carey and McVittys, Ohio, to Charleston, W. Va. Present, 17 cents; proposed, 18 cents.

7806. Sand, Gravel, Crushed Stone and Screenings. From (a) Kenneth and Lake Ciecott, Ind., (b) Kenneth and Perkins Spur (McCray's Quarry), Ind., to stations on the T., P. & W. railroad in Illinois. Present and proposed, as per Exhibit A attached.

Exhibit "A"

To	Sand, gravel and crushed stone from Kenneth and Lake Ciecott		Crushed Stone from Perkins Spur	
	Present	Proposed	Present	Proposed
Crescent City	$0.90	$0.88	$0.76	$0.76
Leonard	.90	.88	.80	.76
Gilman	.90	.88	.80	.76
LaHogue	.98	.88	.88	.80
Piper City	.98	.88	.88	.80
Chatsworth	.98	.88	.88	.80
Forrest	1.01	.88	.95	.80
Fairbury	1.01	.88	.95	.80
Weston	1.01	.88	.95	.80
Chenoa	1.01	.88	.95	.80
Meadows	1.01	.88	.95	.80
Gridley	1.01	.88	.95	.80
Enright	1.01	.88	.95	.80
El Paso	1.01	.88	.95	.80

7802. Sand and Gravel. Urbana, Ohio, to Findlay, Ohio. Present, 6th class; proposed, 90 cents per net ton.

7820. Crushed Stone. Spencer, Ind., to Francisco, Ayrshire, Winslow, Velpen, Duff and Huntingburg, Ind. Present, 15 cents to Francisco, Ayrshire and Winslow, and 16½ cents to Velpen, Duff and Huntingburg, Ind.; proposed, $1.26 per net ton.

7823. Sand and Gravel and Crushed Stone, between Indiana points.

To P. & E. Divisions	Sand and Gravel from Indianapolis, Ind. Current	Proposed
Speedway, Ind.	....	....
Carter, Ind.	$0.60	....
Indiana Girls' School, Ind.	....	$0.60
Clermont, Ind.	.60	....
Brownsburg, Ind.	.81	.70
Pittsboro, Ind.	.81	.75
Lizton, Ind.	.81	.76
Jamestown, Ind.	.76	....
New Ross, Ind.	.85	.76
Linnsburg, Ind.	.81	.76
Crawfordsville, Ind.	.88	.76
Tile Siding, Ind.	....	.88
Waynetown, Ind.	....	.88
Range Road, Ind.	....	.88
Hillsborough, Ind.	....	.88
Veedersburg, Ind.	....	.88
Layton, Ind.	....	.88
Palmerton, Ind.	....	.88
Covington, Ind.	....	.88
Kern, Ind.	....	.88

To P. & E. Divisions	Crushed Stone from Ingalls, Ind. Current	Proposed
Speedway, Ind.	$1.04	$0.86
Carter, Ind.	1.04	.86
Indiana Girls' School, Ind.	1.04	.86
Clermont, Ind.	1.04	.86
Brownsburg, Ind.	1.04	.88
Pittsboro, Ind.	1.04	.88
Lizton, Ind.	1.04	.88
Jamestown, Ind.	1.04	.88
New Ross, Ind.	1.04	.88
Linnsburg, Ind.	1.04	.88
Crawfordsville, Ind.	1.04	.88
Tile Siding, Ind.	1.05	1.01
Waynetown, Ind.	1.05	1.01
Range Road, Ind.	1.10	1.01
Hillsborough, Ind.	1.10	1.01
Veedersburg, Ind.	1.10	1.01
Layton, Ind.	1.13	1.01
Palmerton, Ind.	1.13	1.01
Covington, Ind.	1.13	1.01
Kern, Ind.	1.13	1.01

To P. & E. Divisions	Sand and Gravel from Pendleton, Ind. Current	Proposed
Speedway, Ind.	....	$0.86
Carter, Ind.	....	.86
Indana Girls' School, Ind.	....	.86
Clermont, Ind.	....	.86
Brownsburg, Ind.	....	.88
Pittsboro, Ind.	....	.88
Lizton, Ind.	....	.88
Jamestown, Ind.	....	.88
New Ross, Ind.	....	.88
Linnsburg, Ind.	....	.88
Crawfordsville, Ind.	....	.88
Tile Siding, Ind.	....	1.01
Waynestown, Ind.	....	1.01
Range Road, Ind.	....	1.01
Hillsborough, Ind.	....	....
Veedersburg, Ind.	....	....
Layton, Ind.	....	....
Palmerton, Ind.	....	....
Covington, Ind.	....	....
Kern, Ind.	....	....

To P. & E. Divisions	Sand and Gravel from Anderson, Ind. Current	Proposed
Speedway, Ind.	....	$0.86
Carter, Ind.	....	.86
Indiana Girls' School, Ind.	....	.86
Clermont, Ind.	....	.86
Brownsburg, Ind.	....	.88
Pittsboro, Ind.	....	.88
Lizton, Ind.	....	.88
Jamestown, Ind.	....	.88
New Ross, Ind.	....	.88
Linnsburg, Ind.	....	.88
Crawfordsville, Ind.	....	.88
Tile Siding, Ind.	....	1.01
Waynestown, Ind.	....	1.01
Range Road, Ind.	....	1.01
Hillsborough, Ind.	....	....
Veedersburg, Ind.	....	....
Layton, Ind.	....	....
Palmerton, Ind.	....	....
Covington, Ind.	....	....
Kern, Ind.	....	....

To P. & E. Divisions	Crushed Stone from St. Paul, Ind. Current	Proposed
Indianapolis, Ind.	$0.85	$ ....
Speedway, Ind.	.92	.86
Carter, Ind.	.92	.86
Indiana Girls' School, Ind.	.92	.86
Clermont, Ind.	.92	.86
Brownsburg, Ind.	1.04	.88
Pittsboro, Ind.	1.04	.88
Lizton, Ind.	1.04	.88
Jamestown, Ind.	1.04	.88
New Ross, Ind.	1.04	.88
Linnsburg, Ind.	1.27	.88
Crawfordsville, Ind.	1.27	.88
Tile Siding, Ind.	1.27	1.01
Waynetown, Ind.	1.27	1.01
Range Road, Ind.	1.27	1.01
Hillsborough, Ind.	1.27	....
Veedersburg, Ind.	....	....
Layton, Ind.	....	....
Palmerton, Ind.	....	....
Covington, Ind.	....	....
Kern, Ind.	....	....

To P. & E. Divisions	Crushed Stone from Greencastle, Ind. Current	Proposed
Indianapolis, Ind.	$0.85	$ ....
Speedway, Ind.	.86	....
Carter, Ind.	.86	....
Indiana Girls' School, Ind.	.86	....
Clermont, Ind.	.86	....
Brownsburg, Ind.	.95	.88
Pittsboro, Ind.	.95	.88
Lizton, Ind.	1.00	.88
Jamestown, Ind.	1.00	.88
New Ross, Ind.	1.01*	.88
Linnsburg, Ind.	1.01*	.88
Crawfordsville, Ind.	1.01*	.88
Tile Siding, Ind.	1.01*	....
Waynetown, Ind.	1.01*	....
Range Road, Ind.	1.01*	....
Hillsborough, Ind.	.88*	....
Veedersburg, Ind.	.76*	....
Layton, Ind.	.76*	....
Palmerton, Ind.	.76*	....
Covington, Ind.	.76*	....
Kern, Ind.	.76*	....

*Route via Paris, Ill., Cairo Division, Danville, P. & E.

To P. & E. Divisions	Sand and Gravel from Kern, Ind. Current	Proposed
Indianapolis, Ind.	$0.90	$0.88
Speedway, Ind.	.88	....
Carter, Ind.	.90	.88
Indiana Girls' School, Ind.	.90	.88
Clermont, Ind.	.90	.88
Brownsburg, Ind.	.88	....
Pittsboro, Ind.	.88	....
Lizton, Ind.	.76	....
Jamestown, Ind.	.76	....
New Ross, Ind.	.76	....
Linnsburg, Ind.	.76	....
Crawfordsville, Ind.	.76	....
Tile Siding, Ind.	.75	....
Waynetown, Ind.	.70	....
Range Road, Ind.	.70	....
Hillsborough, Ind.	.69	....
Veedersburg, Ind.	.60	....
Layton, Ind.	.60	....
Palmerton, Ind.	.58	....
Covington, Ind.	.50	....
Kern, Ind.	.11	....

7824. Crushed Stone. White Sulphur, Ohio, to Middle Ridge, South Amherst, Oberlin, Pittsfield, Wellington, Nimocks, Handley, Bakers, Rochester Road, Westonburg, Lindsay, Savannah, Frizzell, Umbaugh, Troy Road, Wertmens, Ashland Junction and Ashland, Ohio. Present, 6th class; proposed, 9 cents per net ton.

7830. Crushed Stone. Lima, Ohio, to Cleveland, Ohio. Present, $1.20 per net ton; proposed, 90 cents pet net ton.

7832. Slag. Chicago to Indiana. Rates per net ton:

To	Present	Proposed
Willow Creek	$1.01	$0.92
McCool	1.01	.92
Babcock	1.01	.92
Woodville	1.01	.92
Suman	1.01	.95
Coburg	1.01	.95
Alida	1.01	.95
Wellsboro	1.01	.95
Union Centre	1.01	1.01
Walkerton	1.01	1.01
Teegarden	1.26	1.15
Lapaz Junction	1.26	1.15
Bremen	1.64	1.38
Napanee	1.64	1.38
Milford Junction	1.64	1.38
Syracuse	1.64	1.38
Wawasee	1.64	1.38
Albion	1.64	1.38
Avilla	1.64	1.38
Garrett	1.64	1.38
Auburn Junction	1.64	1.38
St. Joe	1.64	1.38

Illinois Freight Association

2067D. Crushed Stone. Carloads, minimum weight capacity of car, $1.26 per net ton from Lehigh and Kankakee and $1.39 from Thornton, Ill., to Shattuc, Huey, Carlyle and Beckemeyer, Ill.

2215A. Sand. Carloads, minimum weight 90 per cent of marked capacity of car, $1.60 per net ton from Muscatine, Iowa, to Milwaukee and Racine, Wis.

2187A. Crushed Stone. Carloads, minimum weight 90 per cent of marked capacity of car, 88 cents per net ton from Thornton, Ill., to Effner, Ind., Sheldon, Eastburn, Crescent City, Leonard, Gilman, La Hogue, Piper City, Chatsworth, Forrest and Fairbury, Ill.

2296. Sand and Gravel. Carloads, minimum weight 90 per cent of marked capacity of car, 76 cents per net ton from Ottawa, Ill., to Earlville, Meriden and Mendota, Ill.

New England Freight Association

5578. Sand, blasting, core, fire and sea. Provincetown, Mass., to Westfield, Mass., 14½ cents. Reason: To permit movement of additional tonnage.

5821. Sand, blasting, core, fire and sea. Onset, Provincetown, S. Wareham, Wareham, Mass., to Boston and intermediate points, 8 cents. Reason: Motor truck and water competition.

Southern Freight Association

12306. Sand and Gravel. Carloads, minimum weight marked capacity of car, from Fort Gaines, Ga., to Valdosta, Ga., and G. S. & F. Ry. stations, viz.: Boyd, Dasher, Wade, Lake Park, Melrose and Beatty, Ga. Combination rates now apply. Proposed rate, $1.58 per net ton, made on basis of the proposed Georgia scale.

12319. Slag. Carloads, from Birmingham, Ala., and Group, to Eufaula, Ala. Present rate, $33.50 per car of 36,000 lb., or $1.86 per net ton. (Class "P.") Proposed, $1.58 per net ton, based on the proposed Georgia scale for distance of 251 miles via the C. of Ga. Ry. direct.

12330. Slag. Carloads, from Birmingham, Ala., and Group, to Waynesboro, Ga. Present rate, $42.50 per car of 36,000 lb., or $2.36 per net ton. (Class "P.") Proposed, $1.89 per net ton, based on the proposed Georgia scale for distance of 390 miles via the C. of Ga. Ry. direct.

12337. Lime. Building, chemical and hydrated, carloads, minimum weight on Virginia intrastate traffic, 12 cents net ton, and on interstate traffic, 15 cents net ton, from Toms Brook, Va., to Strasburg Junction, Va., when for bld. Present, $1.01 per net ton; proposed, 45 cents per net ton, same as present rate from Riverton, Va., to Strasburg Junction, Va.

12376. Stone, crushed. Carloads, minimum weight 90 per cent of marked capacity of car, from Klotz, Va., to Fair Oaks, Va. No through rate at present in effect. Proposed, $1.90 per net ton, made in relation to rate applicable from Rocky Point, Va.

12390. Sand and Gravel. Carloads, from Ohio River crossings to Corbin and Lot, Ky. Present, from Cincinnati, Ohio, Covington and Newport, Ky., to Corbin, Ky., 7 cents; proposed, 8 cents per 100 lb., same as rate from Louisville, Ky. Present, from Louisville, Ky., Jeffersonville and New Albany, Ind., to Lot, Ky., 8 cents; proposed, 8½ cents per 100 lb., same as rate from Cincinnati, Ohio. The present rates are on an erroneous basis.

12414. Crushed Stone. Minimum weight marked capacity of car, from Brighton, Tenn., to Chicago, Ill., and points taking Chicago rates, as per Agent Jones Tariff 104K. Present, $13.35 per net ton (Ohio River combination); proposed, $4.24 per net ton, arrived at by using $1.89 to Ohio River, plus $2.65 north, minus 30 cents per ton, in accordance with Combination Tariff 228.

12426. Slag. Carloads, from Ensley (B. S. R. R.), Bessemer, Birmingham and Woodward, Ala., to Lineville, Ala. Present, from Ensley, $1.49; from other points, $1.40 per net ton; proposed, from points named, $1.20 per net ton, made to meet competition with rates on gravel from Jackson's Lake and Prattville Junction, Ala. Proposed rate, it is stated, compares favorably with present rate from Birmingham Group points to Atlanta, LaGrange and Roanoke; from Birmingham, Bessemer and Woodward to Ashland, Ala.; and from Birmingham Group points to Talladega, Ala.

Southwestern Freight Bureau

10544. Lime. To amend Item 3686D. Sup. 41 of Tariff 15L applying on lime, carloads, from Missouri points to Oklahoma destinations, by adding Glencoe and Glen Park, Mo., as points of origin, claim being made that rates from these points should be the same as in effect from other producing points in the immediate vicinity.

Western Trunk Line

774A. Stone (rubble or rip rap). Carloads, between points in Kansas. Present, undressed stone rates; proposed, crushed stone rates. Minimum weight 90 per cent of marked capacity of car; except that when weight of shipment loaded to full visible capacity of car is less than 90 per cent of marked capacity of car the actual weight will apply, but in no case shall the minimum weight be less than 40,000 lb.

Removal of Tariff on Brick Disturbs Makers

THE removal of the tariff on the importation of foreign brick is not pleasing to American brick manufacturers. They consider the situation as serious for American brick makers, especially in the New York district. A statement issued recently by the Common Brick Manufacturers Association of America asks if it is fair to expect Hudson river brick manufacturers to compete with Dutch and German manufacturers, whose manufacturing costs are only a fraction of those imposed by American living conditions and whose product is brought over here as ballast.—*New York Tribune.*

Lime Rates Reduced

REDUCTION in the freight rate on acetate of lime, amounting to 18½ cents per 100 lb., was announced recently by Willis Reeves, assistant general freight agent at Memphis, Tenn., for the Illinois Central Railroad. The reduction in rates will apply on shipments in carload lots from Memphis to Baltimore, Md., the report states.

The former rate was 83 cents per 100 lb., while the new rate, which became effective December 27, is 64½ cents per 100. The new rate can be found in supplement No. 15 to Agent Speiden's Tariff 48-c.

American Construction Council

THE president of the American Construction Council, Franklin D. Roosevelt, has issued a statement defining the aims of the council and setting forth some of the work which it has in hand. He says in part:

"As the main effort of the council is to bring together for the first time all persons or organizations interested in construction or the manufacture or supply of materials for construction, together with the labor that enters into construction, and to act for them in bringing to the attention of the public what is needed to keep on a fair basis the costs of construction in this country, it was the unanimous opinion of those present that local get-together associations in practically every state in the United States is an essential step in this work.

"It was also brought out that there is a real scarcity of skilled labor in several of the building trades which made it impossible to secure workmen in many localities during peak periods at any price whatever. In other trades, the council has already discovered a local shortage in one place and a local surplus in another. In such cases, rather than encourage new apprentices in the trade, the efforts of the council will be devoted to adjusting these conditions. One of the most immediate and effective ways of remedying these conditions is of course securing young men to enter the trades where there is a real national shortage. Accordingly the council has by resolution undertaken as part of its program for the year the encouragement of the establishment and strengthening of schools for apprentices throughout the country and the securing of desirable pupils therefor in every way that lies in its power."

In conclusion the council makes the following suggestions for future work:

1. Maintenance, repairs nad alterations of existing structures, through long custom rather than through any other reason, are carried on during that portion of the year when new construction is most active. It will be in the interest of all concerned to do such maintenance work as is possible during the closed season and now is the time for owners and managers to give this full consideration.

2. Miscellaneous new construction that should not take more than four to five months to complete can ordinarily be undertaken in the fall and carried on under more advantageous conditions which will result in satisfaction all around, at the same time giving continuous employment to workers who might otherwise be idle.

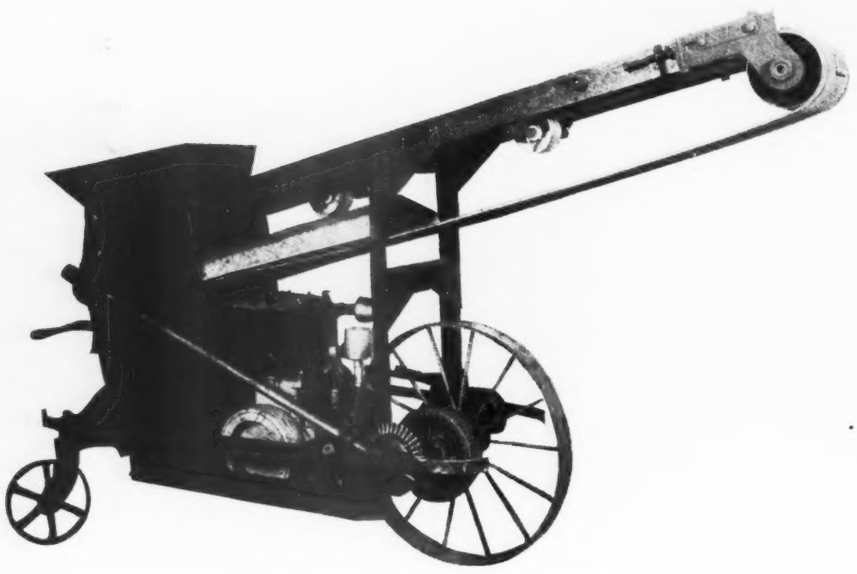
3. There appears to be a continuing demand for construction of large projects. It is perhaps too early to predict that this will result in an abnormal demand for labor and materials next spring, yet there seems to be such a trend. Therefore, until the season is further advanced and this can be determined more definitely, the situation in many localities suggests caution as indicated in the report of the American Construction Council of last spring. However, such necessary construction as is to be done should be arranged for now and the preliminary work undertaken at an early date so as to gain the advantage of all favorable periods for progress between intermittent interruptions caused by inclement conditions and in addition relieve as much as possible the congestion that may come in the spring.

4. The American Construction Council is considering the economic aspects of the construction industry as they affect the people of this country as a whole and this statement is not intended to apply to those localities where the supply of labor is ample and weather conditions will permit construction work to go forward normally.

Sand and Gravel Reparation

A FINDING of unreasonableness and an award of reparation have been recommended by Examiner John H. Howell in No. 13936, Richardson Sand Co. vs. Director-General, as to rates and shipments of sand and gravel from Carpentersville, Ill., to Edison Park, Chicago, and Park Ridge, Ill., at various times in the period of federal control. He said the rates should be found unreasonable to the extent they exceeded 1.5 cents per 100 pounds prior to June 25, 1918, and 2.5 cents thereafter and that reparation should be awarded to that basis.

New Machinery and Equipment



The Portable Handy box car loader

A Self Moving Box Car Loader

THE Ottumwa Box Car Loader Co. of Ottumwa, Iowa, has a new machine called the Portable Handy Belt Loader, which is a decided novelty in box car loaders, as it can be moved from place to place by its own power.

The application of power to the traction wheels is very simple, consisting of a worm gear driven from the main drive shaft of the loader proper. A long shaft set at an angle transmits the power from this gear to the traction gearing. The lever shown in the picture is for changing gears, one gear running it forward and the other backward, without any reversing of the engine, or motor, as the case may be.

This is a real improvement in box car loaders, and the addition of the traction drive equipment has not added greatly to the cost.

Preventing Corrugations in Gravel and Crushed Limestone Roads

"AFTER experimenting months on a gravel road in southern Indiana we are confident of having solved the problem of taking ruts or corrugations out of this type of surface," A. H. Hinkle, maintenance superintendent of the Indiana State Highway Commission, told engineers attending the Tenth Annual Purdue Road School.

The Hinkle method of overcoming corrugations is simple. In the main it consists of crushing gravel and stone so it will pass through a 1-in. screen and applying the dust along with screenings. Dust, he says, will with proper and systematic maintenance almost entirely eliminate ruts, the most annoying features of gravel and stone travel. He said the experiment had been tried for several months under most trying conditions, and to date all expectations for its success had been realized. The new plan will be adopted on all gravel and stone roads in the Indiana state system.

Corrugations are formed in gravel roads when traffic reaches a certain density, and are due to the vibration of the car combined with the slipping or "kick back" of the drive wheel as it drops into the trough of the corrugation. Corrugation development is accelerated after a rain by water being splashed out of the depressions and carrying with it some of the gravel and sand. This accounts for corrugation developing faster on flat grades.

Mr. Hinkle said that he has frequently reduced the corrugation very extensively by the addition on the ordinary gravel road of a thin coat of crushed gravel passing a 1-in. opening and containing all the dust incident to crushing. Also, crushed limestone of the same grade can be used in the same way. Roads made of limestone and maintained by the dragging process same as gravel roads, corrugate much less than the average gravel road. This is due, he explained, because stone apparently had a greater cementing value. However, stone roads not properly maintained are more inclined to develop "pot holes' instead of the rythmic corrugations developed by the gravel.

The speaker emphasized the importance of dragging to prevent formation of corrugations.

The speaker gave a review of maintenance work in general on the state road system and pointed to the vast amount of work done at widening, easing curves, extending sight distances, widening narrow culverts, widening fills and the like. The result is, he said, that practically all mileage in the Indiana system is all-year mileage. And agricultural communities formerly cut off from markets several months each year are reaping additional prosperity by reason of twelve monthss' communication.

Automatic Weighing of Rock Products

MANY problems arise in a cement mill or other industrial plant which can very easily be solved by records giving the weight of the ingredients or materials going into a mix, to the crushers, into railroad cars or into sacks for commercial marketing.

Of late, more and more automatic scales are being used in the rock products industries and Richardson scales for weighing limestone and clinker, clay, gypsum, etc., have been sold in large numbers. The Huron Portland Cement Co., at Alpena, Mich., have installed 12 scales arranged in one battery, for weighing limestone and clinker in proper proportions. Another set will be installed shortly, this to consist of six scales in one battery. Numbers of scales have been shipped to Japanese cement mills for weighing cement—both in bulk and into sacks—limestone, clay, gypsum, clinker, marl, etc. The earthquake in Japan for a time lessened production in several of the mills but they are now once again on their feet and repeat orders, and replacement orders, for machines destroyed in the catastrophe, come in frequently from Japanese firms.

There have been many improvements added to automatic weighing devices in the past two or three years. Richardson Scale Co. has designed and produced in quantity an entirely different type of scale known as the apron feed model. With this scale a short endless conveyor belt delivers the material to the weighing hopper. When the exact amount has entered the weigh hopper the conveyor is stopped and the material discharged. Full particulars will be cheerfully submitted to engineers or firms desiring them.

The next year, it is felt, will be even more prosperous in the cement mill industry and everywhere new machinery is being ordered for additions or improvements to existing plants and for new mills now in course of construction.

The scale is made by Richardson Scale Co., Passaic, N. J.

The Miami Fordson Scraper

THE Miami Fordson one-man power scraper is exactly what the name indicates. A power scraper operated by one man loading, transporting and dumping by the tractor driver from the tractor driver's seat without stopping—delivering every trip between 18 and 21 cu. ft. rounded load of dirt.

This reproduction is in the hauling position. The tractor operates about three times as fast as horses in this class of work. One man loads, drives to the dump, unloads and spreads material, and returns to the loading point without leaving the tractor seat. It all is accomplished with the one lever which operates the winch.

As soon as the unit reaches the dump, the operator pushes forward on the control lever and winds the pan up to a perpendicular position. This allows all the dirt to roll at the rear. The material will dump all in one spot if the tractor is stopped for an instant, but will distribute it over the ground if kept in motion.

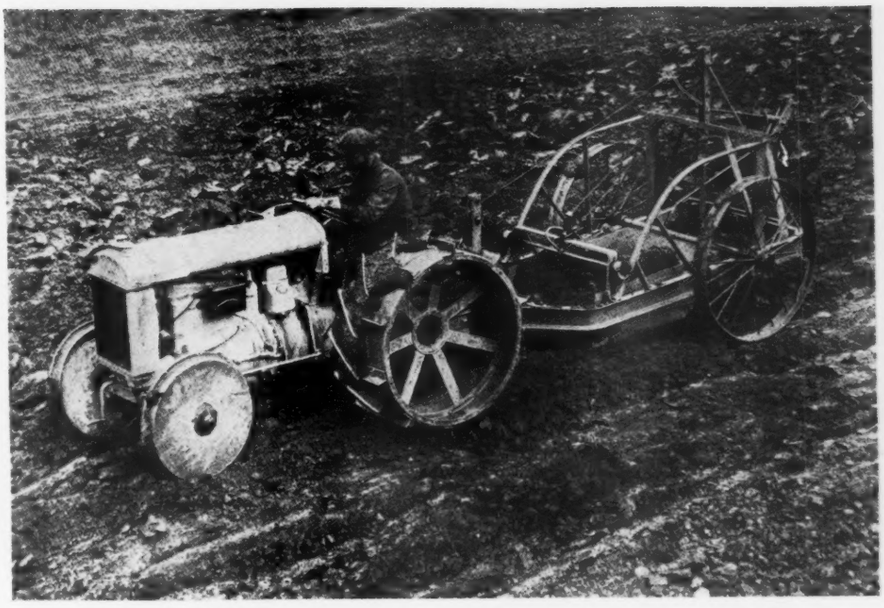
The operator then returns to the loading point ready for another load. If sharp curves are encountered, the scoop can be turned in the same radius as the tractor. It can also be easily backed up to any given position.

When the operator returns to the loading point, he pulls backward on the control lever at his right side. This lowers the pan ready for another load.

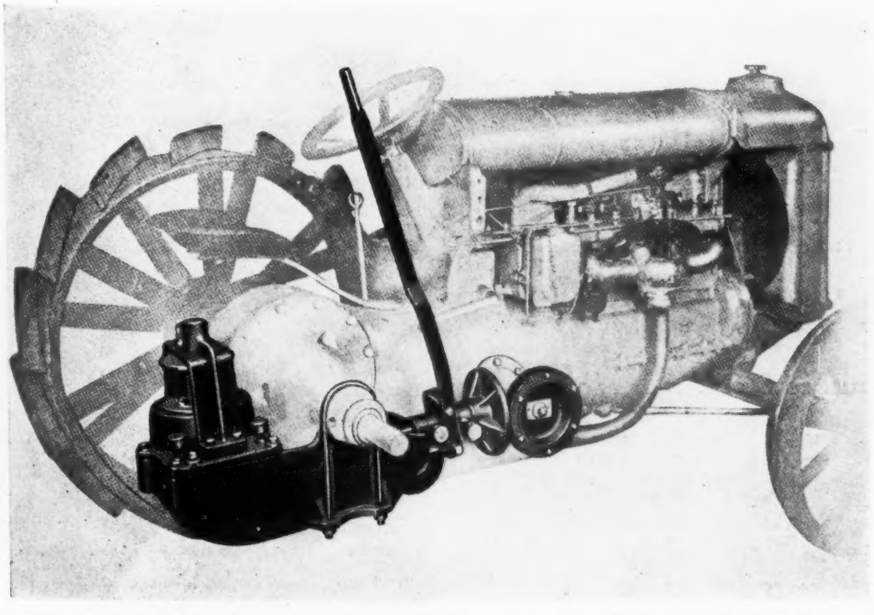
If a stone or root is struck while loading, the wheels of the tractor will spin around. The operator then raises the pan slightly, goes over the obstruction and immediately lowers it again on the other side to get a full load. In this manner the unit cannot become stalled for any reason. If the pan should get under a stone so large it cannot be raised, the entire unit can be backed to release it and then proceed as above outlined.

The scraper is built entirely of steel reinforced at every vital point. It is so constructed that it can be disconnected from the tractor in about three minutes. This leaves the tractor free for other uses. The power winch does not interfere with the regular hitch and may be left on the tractor permanently, as it does not operate except when the friction clutch is engaged by the control lever.

It has been proved many times by actual performance that the machine unit will replace four teams and six men. It is made by Miami Trailer Co., Troy, Ohio.



The Miami Fordson one-man power scraper which has been shown to replace four teams and six men by actual performance



Phantom view showing connection with the tractor and the central control lever by which the whole operation is controlled

American Graphites for Crucibles

AS the result of a series of tests made by the Department of the Interior, through the Bureau of Mines, it has been demonstrated that American bond clays and Alabama graphite can be used to make a superior brass-melting crucible. Tests showed that crucibles made of these materials gave a service at least equal to the commercial crucibles of the same class which have been sold on the open market, and which are made largely from imported materials. Ceylon graphite, which has heretofore been considered by many manufacturers to be best for crucible work, proved to be third in order of efficiency. Canadian graphite, which had been recommended very highly because of its structure, was last in order of merit. During the war, when crucible manufacturers were required to use 20 per cent of domestic graphite, the majority of manufacturers used the Canadian graphite in preference to Alabama graphite because it was composed of larger flakes. In all, seven graphites were tested by the Bureau of Mines, comprising material from Alabama, Madagascar, Ceylon, New York, Texas, Montana and Canada.

Previous investigations of the Bureau of Mines demonstrated that two American clays, Missouri pot clay and Illinois kaolin, gave better results as bond clays for graphite crucibles than the Klingerberg (German) clay or the Dorset (English) ball clay.

Details of these tests are given in Serial 2542, "Graphites for Brass-Melting Crucibles," by R. T. Stull and L. E. Geyer, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

The Rock Products Market

Wholesale Prices of Crushed Stone

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:						
Blakeslee, N. Y.	1.00	1.40	1.40	1.30	1.30	.....
Buffalo, N. Y.			1.50 per net ton all sizes			
Chaumont, N. Y.	1.00	.....	1.75	1.50	1.50	1.50
Cobleskill, N. Y.	1.25	1.25	1.25	1.25	1.25	.....
Coldwater, N. Y.			1.50 per net ton all sizes			
Eastern Pennsylvania	1.35	1.35	1.45	1.35	1.35	1.35
Munns, N. Y.	1.00	1.40	1.40	1.30	1.30	.....
Prospect, N. Y.	.80	1.40	1.40	1.30	1.30	.....
Walford, Pa.	1.55	1.55	1.55	1.55	1.55	1.55
Watertown, N. Y.	.50	.....	1.75	1.50	1.50	1.50
Western New York	.85	1.25	1.25	1.25	1.25	1.25
CENTRAL:						
Alton, Ill.	1.75	.....	1.75	1.50	.....	.....
Bloomville, Middlepoint, Dunkirk, Bellevue, Ohio	1.00	1.10	1.10	1.00	1.00	1.00
Buffalo, Iowa	1.00	.....	1.45	1.25	1.30	1.30
Chicago, Ill.	.80	1.40	1.10	1.10	1.10	1.10
Dundas, Ont.	.90	1.35	1.35	1.25	1.10	1.10
Greencastle, Ind.	1.25	1.10@1.20	1.05	1.05	.95@1.05	.95@1.05
Krause, Columbia and Valmeyer, Ill.	1.20	1.20	1.35	1.35	1.20	1.20
Lannon, Wis.	.70	1.00	1.00	1.00	.90	.90
St. Vincent de Paul, P. Q.	.85	1.20@1.45	1.15	1.05	.95	.95
Sheboygan, Wis.	1.05@1.10	1.05@1.10	1.05@1.10	1.05@1.10	1.05@1.10	1.05@1.10
Stolle, Ill. (I. C. R. R.)	1.30	.....	1.35	1.35	1.35	1.35
Stone City, Iowa	.75	.....	1.50†	1.40	1.30	.....
Toronto, Canada	1.90	2.25‡	2.25‡	2.25‡	2.00	2.00
Waukesha, Wis.	1.15	1.15	1.15	1.15	1.15	1.15
SOUTHERN:						
Alderson, W. Va.	.75	1.25	1.40	1.25	1.15	.....
Bridgeport, Texas	1.10	1.40	1.35	1.35	1.25	1.25
Cartersville, Ga.	.....	1.75	1.50	1.00	1.00	.....
Chickamauga, Tenn.	.80@1.00	1.00@1.25	.....	.85@1.00	.85@1.00	.....
Dallas, Texas	1.00	1.35	1.35	1.25	1.25	1.25
El Paso, Texas	1.00	1.00	1.00	1.00	.....	.....
Ft. Springs, W. Va.	.60	1.70	1.70	1.60	1.50	.....
Garnet and Tulsa, Okla.	.50	1.60	1.60	1.45	1.45	.....
Graysville, Ga.	.75@1.00	.90@1.25	.....	.75@1.00	.75@1.00	.....
Ladds, Ga.	.....	.....	1.40	1.40	1.40	.....
Morris Spur (near Ft. Worth), Tex.	1.10	1.35	1.30	1.25	1.25	1.20
WESTERN:						
Blue Spr'gs and Wymore, Neb.	.20	1.45	1.45	1.35@1.40	1.25@1.30	1.20
Cape Girardeau, Mo.	1.35*	1.25*	1.25*	1.25*	1.00*	.....
Kansas City, Mo.	1.00	1.65	1.65	1.65	1.65	1.65

Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Branford, Conn.	.60	1.50	1.35	1.15	1.00	.....
Dresser Jct., Wis.	1.00	2.25	.....	1.75	2.00	.....
Duluth, Minn.	1.00	2.25	2.00	1.50	1.40	.....
E. Summit, N. J.	2.00	.....	.....	1.80	.....	.....
Eastern Massachusetts	.85	1.75	1.75	1.40	1.40	1.40
Eastern New York	.75	1.50	1.50	1.30	1.40	1.30
Eastern Pennsylvania	1.25	1.55	1.50	1.40	1.40	1.40
New Britain, Middlefield, Rocky Hill, Meriden, Conn.	.60	1.50@2.00	1.35@1.50	1.15@1.25	1.00@1.10	.....
Oakland, Calif.	1.00	1.00	1.00	.90	.90	.....
Richmond, Calif.	.50*	.....	1.65*	1.50*	1.50*	.....
San Diego, Calif.	.50@.75	1.80@1.90	1.60@1.80	1.35@1.55	1.35@1.55	1.25@1.45
Spring Valley, Calif.	.70	1.55	1.50	1.40	1.35	1.35
Springfield, N. J.	2.00	2.00	2.20	1.90	1.90	.....
Westfield, Mass.	.60	1.50	1.35	1.20	1.10	.....

Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Atlanta, Ga.—Granite	1.47	2.07	2.07	1.97	1.97	.....
Buffalo, N. Y.—Granite	.90	.....	1.20	1.00	1.05	1.10
Berlin, Utley and Red Granite, Wis.	1.60	1.70	1.60	1.50	1.40	.....
Columbia, S. C.	.....	.....	2.00	1.75	1.75	.....
Eastern Penna.—Sandstone	.85	1.60	1.55	1.35	1.35	1.30
Eastern Penna.—Quartzite	1.20	1.35	1.20	1.20	1.20	1.20
Lithonia, Ga.—Granite	.75	1.75	1.75	1.25	1.25	1.25
Los Angeles, Calif.	2.00	2.00	1.85	1.75	1.65	.....
Middlebrook, Mo.—Granite	3.75@4.00	.....	2.00@2.25	2.00@2.25	.....	1.25@2.00
Sioux Falls, S. D.—Granite	1.00	1.60	1.55	.....	1.50	.....

*Cubic yd. †1 in. and less. ‡Prices include 90c freight.

Agricultural Limestone

(Pulverized)

Cassadaga, N. Y.—Marl, 50 lb. hemp bags	7.00@ 9.00
Chaumont, N. Y. — Analysis, 95% $CaCO_3$, 1.14% $MgCO_3$ — Thru 100 mesh; sacks, 4.50; bulk	3.00
Branchton, Pa. — Analysis, 94.89% $CaCO_3$, 1.50% $MgCO_3$; 60% thru 100 mesh; 45% thru 200 mesh; 100% thru 20 mesh; sacks, 5.00	3.50
Hillsville, Pa.—Analysis, 94% $CaCO_3$, 1.40% $MgCO_3$, 75% thru 100 mesh; 94% thru 50 mesh; sacks, 5.00; bulk	3.50
Jamesville, N. Y. — Analysis, 89.25% $CaCO_3$; 5.25% $MgCO_3$; pulverized, bags, 4.15; bulk	2.65
Watertown, N. Y.—Analysis 96-99% $CaCO_3$; 0.02% $MgCO_3$—90% thru 100 mesh, bags, 4.50; bulk	3.00
New Castle, Pa.—94% $CaCO_3$, 1.40% $MgCO_3$—75% thru 100 mesh, 94% thru 50 mesh; sacks, 5.00; bulk	3.50
West Stockbridge, Rockdale, Mass., North Pownal, Vt.—Analysis, 90% $CaCO_3$—50% thru 100 mesh; paper bags, 4.75; cloth, 5.25; bulk	3.25
Alton, Ill. — Analysis, 98% $CaCO_3$, 0.5% $MgCO_3$; 90% thru 100 mesh	4.00
Belleville, Ont. — Analysis, 90.9% $CaCO_3$, 1.15% $MgCO_3$—45% to 50% thru 100 mesh, 61% to 70% thru 50 mesh; bulk	2.50
Cypress, Ill. — Analysis, 96.12% $CaCO_3$, 2.5% $MgCO_3$; 50% thru 100 mesh, 90% thru 50 mesh, 50% thru 50 mesh, 90% thru 4 mesh	1.50
Marblehead, Ohio — Analysis, 83.54% $CaCO_3$, 14.92% $MgCO_3$; 60% thru 100 mesh; 80-lb p. sacks 5.00; bulk	3.50
Piqua, Ohio—Total neutralizing power 95.3%; 100% thru 10, 60% thru 50; 50% thru 100	2.10@ 2.25
100% thru 10, 90% thru 50, 80% thru 100; bags, 5.00; bulk	3.50
100% thru 100, 85% thru 200; bags, 7.00; bulk	5.50
Waukesha, Wis.—Analysis, neutralizing equivalent 107.38% $CaCO_3$; 99% thru 10 mesh, 55% thru 60 mesh; bulk	2.35
200-mesh bags ex., returnable	4.50
Hot Springs, N. C.—50% thru 100 mesh; sacks, 4.25; bulk	2.70
Knoxville, Tenn.—75% thru 100 mesh, bags, 3.95; bulk	2.70
Linville Falls, N. C.—Analysis, 57% $CaCO_3$, 39% $MgCO_3$; 50% thru 100 mesh; 200 lb. burlap bag, 4.00; bulk	2.75
Mountville, Va. — Analysis, 76.60% $CaCO_3$, 22.83% $MgCO_3$—50% thru 100 mesh; 100% thru 20 mesh; sacks	5.00
Colton Calif.—Analysis, 95% $CaCO_3$, 3% $MgCO_3$—all thru 20 mesh—bulk	4.00
Lemon Cove, Calif.—Analysis, 94.8% $CaCO_3$, 0.42% $MgCO_3$; 60% thru 200 mesh; sacks, 5.25; bulk	4.50
Dundas, Ont. — Analysis, 53.80% $CaCO_3$, 43.31% $MgCO_3$—35% thru 100 mesh; 50% thru 50 mesh; 100% thru 10 mesh; bagged, 4.75; bulk	3.00

Agricultural Limestone

(Crushed)

Bellevue, Ohio — Analysis, 61.56% $CaCO_3$, 36.24% $MgCO_3$; ¼ in. to dust, about 20% thru 100 mesh	1.25
Bettendorf, Iowa, and Moline, Ill.—97% $CaCO_3$, 2% $MgCO_3$; 50% thru 100 mesh; 50% thru 4 mesh	1.50
Buffalo, Iowa—90% thru 4 mesh	1.00
Cape Girardeau, Mo.—Analysis, 93% $CaCO_3$, 3.5% $MgCO_3$; 90% thru 50 mesh	1.50
Chicago, Ill.—Analysis, 53.63% $CaCO_3$, 37.51% $MgCO_3$; 90% thru 4 mesh	.80
Elmhurst, Ill.—Analysis, 35.73% $CaCO_3$, 20.69% $MgCO_3$; 50% thru 50 mesh	1.25
Huntington and Bluffton, Ind.—Analysis, 61.56% $CaCO_3$, 36.24% $MgCO_3$; about 20% thru 100 mesh	1.25

(Continued on next page)

Agricultural Limestone

(Continued from preceding page)

Greencastle, Indiana.—Analysis, 98% $CaCO_3$; 50% thru 50 mesh	2.00
Kansas City, Mo.—50% thru 100 mesh	1.25
Krause and Columbia, Ill.—Analysis, 90% $CaCO_3$, 90% thru 4 mesh	1.20
Marblehead, Ohio.—Analysis, 83.54% $CaCO_3$, 14.92% $MgCO_3$; 100% thru 4 mesh; 83% thru 10 mesh; bulk	1.25
Milltown, Indiana.—Analysis, 94.41% $CaCO_3$, 2.95% $MgCO_3$; 35% thru 50 mesh	1.40@ 1.65
Narlo, Ohio.—Analysis, 56% $CaCO_3$ 43% $MgCO_3$; limestone screenings, 37% thru 100 mesh, 55% thru 50 mesh, 100% thru 4 mesh	1.50@ 2.00
Ohio (different points), 20% thru 100 mesh, bulk	1.25@ 1.50
Piqua, Ohio—100% thru 4 mesh	1.25
River Rouge, Mich.—Analysis, 54% $CaCO_3$, 40% $MgCO_3$; bulk	.80@ 1.40
Stolle, Ill., near East St. Louis on I. C. R. R.—Thru ¼-in. mesh	1.30
Stone City, Iowa.—Analysis, 98% $CaCO_3$; 50% thru 50 mesh	.75
Waukesha, Wis.—No. 1 kiln dried	2.00
No. 2 Natural	1.75
Alderson, W. Va.—Analysis, 90½ $CaCO_3$; 90% thru 50 mesh	1.75
Claremont, Va.—Analysis, 92% $CaCO_3$, 2% $MgCO_3$; 90% thru 50 mesh	3.00
50% thru 50 mesh, 90% thru 4 mesh, 50% thru 4 mesh	2.75
Ft. Springs, W. Va.—Analysis, 90% $CaCO_3$; 50% thru 100 mesh	1.50
Ladds, Ga.—Analysis, 56% $CaCO_3$, 40% $MgCO_3$—all passing 10 mesh	1.50@ 1.75
Garnett, Okla.—Analysis, 80% $CaCO_3$, 3% $MgCO_3$; 100% thru 4 mesh	.50
Kansas City, Mo., Corrigan Siding—50% thru 100 mesh; bulk	1.80
Tulsa, Okla.—90% thru 4 mesh	.50

Miscellaneous Sands

Silica sand is quoted washed, dried and screened unless otherwise stated.

Glass Sand:	
Berkeley Springs, W. Va.	2.25@ 2.50
Cedarville and South Vineland, N. J.—Damp, 1.75; dry	2.25
Cheshire, Mass.—24 mesh, 5.00; 40 mesh, 6.00; 100 mesh	7.00
Columbus, Ohio	1.50@ 1.75
Dunbar, Pa.—Damp	2.50
Falls Creek, Pa.	2.25
Hancock, Md.—Damp, 1.50; dry	2.00
Klondike and Pacific, Mo.	2.00@ 2.50
Mapleton, Pa.	2.25@ 2.50
Mapleton Depot, Pa.	2.00@ 2.50
Massillon, Ohio	3.00
Michigan City, Ind.	.50
Millville, N. J.	2.00
Mineral Ridge, Ohio	2.50
Ottawa, Ill.	1.50
Pittsburgh, Pa.—Dry, 4.00; damp	3.00
Ridgway, Pa.	2.50
Rockwood, Mich.	2.75@ 3.25
Round Top, Md.	2.25
Sands, Pa.	2.50
San Francisco, Calif.	3.00@ 3.50
St. Louis, Mo.	2.50@ 3.00
Thayers, Pa.	2.50
Utica, Ill.	1.25@ 1.50
Zanesville, Ohio	2.50
Foundry Sand:	
Albany, N. Y.—Molding fine, brass molding	3.00
Molding coarse	2.75
Sand blast	4.00
Allentown, Pa.—Core and molding fine	1.75@ 2.00
Arenzville, Ill.—Molding fine	1.50@ 1.75
Brass molding	1.75
Beach City, Ohio.—Core, washed and screened	2.00@ 2.50
Furnace lining	2.50@ 3.00
Molding fine and coarse	2.25@ 2.50
Cheshire, Mass.—Furnace lining, molding fine and coarse	5.00
Sand blast	5.00@ 8.00
Stone sawing	6.00
Cleveland, Ohio.—Molding coarse	1.50@ 2.00
Brass molding	1.50@ 2.00
Molding fine	1.50@ 2.25
Core	1.25@ 1.50

(Continued on next page)

Wholesale Prices of Sand and Gravel

Prices given are per ton, f. o. b. producing plant or nearest shipping point

Washed Sand and Gravel

City or shipping point	Fine Sand, 1/10 in. down	Sand, ¼ in. and less	Gravel, ½ in. and less	Gravel, 1 in. and less	Gravel, 1½ in. and less	Gravel, 2 in. and less
EASTERN:						
Ambridge and So. Hts., Pa.	1.25	1.25	1.15	.85	.85	.85
Buffalo, N. Y.	1.10	.95			.85	
Erie, Pa.		1.00		1.25		1.75
Farmingdale, N. J.	.68	.68	.95	1.30	1.30	
Pittsburgh, Pa.	1.25	1.25	.90	.85	.85	.85
Portland, Me.		.50	1.75		1.35	1.25
Washington, D. C.—Rewashed, river	.75	.75	1.60	1.40	1.20	1.20
CENTRAL:						
Columbus, Ohio	.75	.75@1.15	.75@1.15	.75	.75@1.15	.75
Covington, Ind.	.75	.75	.75	.75	.75	.75
Des Moines, Iowa	.50	.50	1.25	1.60	1.60	1.60
			Unwashed ballast, .50 ton			
Attica, Ind.	.75	.75	.75	.75	.75	.75
Eau Claire, Wis.	.40	.40	.85@1.35			.85@ .95
Elkhart Lake, Wis.	.60	.60	.70	.70	.70	.70
Grand Rapids, Mich.		.50		.80		.70
Hamilton, Ohio		1.00			1.00	
Hersey, Mich.		.50				.70
Indianapolis, Ind.	.60	.60		1.50	.75@1.00	.75@1.00
Janesville, Wis.		.65@ .75			.65@ .75	
Mason City, Iowa	.65	.65	1.70	1.70	1.65	1.65
Mankato, Minn.	.50†	.40			1.35	
Milwaukee, Wis.	1.11	1.11	1.36	1.36	1.36	1.36
Moline, Ill.	.60	.60	Concrete gravel, 40% G., 60% S., .90			
Palestine, Ill.	.75	.75	.75	.75	.75	.75
St. Louis, Mo., f.o.b. cars	1.20	1.45	1.65§	1.45		1.45‖
Silverwood, Ind.	.75	.75	.75	.75	.75	.75
Summit Grove, Ind.	.75	.75	.75	.75	.75	.75
Terre Haute, Ind.	.75	.75	1.00	1.00	.90	.90
Waukesha, Wis.	.50	.50	.80	.80	.80	.80
Winona, Minn.	.40	.40	1.75	1.50	1.40	1.40
			(.05 ton discount 10 days)			
SOUTHERN:						
Brookhaven, Miss.; Roseland, La.		.25			1.00	
Charleston, W. Va.	all sand 1.40 f.o.b. cars		all gravel 1.50 f.o.b. cars			
Ft. Worth, Texas	2.25	2.25	2.25	2.25	2.25	2.25
Knoxville, Tenn.	1.00	1.00	1.20	1.20	1.20	1.20
Lake Weir, Fla.		.50				
New Martinsville, W. Va.	1.00	1.00		1.20		.80
WESTERN:						
Kansas City, Mo.			Kaw river sand .75 per ton f.o.b. plants			
Los Angeles, Calif.		.85@1.15	1.00@1.25	1.00@1.25	1.00@1.25	
Pueblo, Colo.	1.10*	.90*			1.50*	
San Diego, Calif.	.50@.65	.80@.90	1.40@1.50	1.20@1.30	1.00@1.10	1.00@1.10
Seattle, Wash. (bunkers)	1.25*	1.25*	1.50*	1.25*	1.25*	1.25*
Webb City, Mo. (chats)	.75		.25@ .75		1.15	1.00

Bank Run Sand and Gravel

City or shipping point	Fine Sand, 1/10 in. down	Sand, ¼ in. and less	Gravel, ½ in. and less	Gravel, 1 in. and less	Gravel, 1½ in. and less	Gravel, 2 in. and less
Boonville, N. Y.	.60@ .80		.55@ .75			1.00
Brookhaven, Miss., Rosel'd, La.	.75	.50			1.25	
Dudley, Ky.‡	1.00	1.00		.95		
Elkhart Lake, Wis.	.60	.50				
Fishers, N. Y.	.60		.60			.50
Gainesville, Texas		.95				.55
Grand Rapids, Mich.						.60
Hamilton, Ohio					.70	
Hersey, Mich.				.50		
Indianapolis, Ind.			Mixed gravel for concrete work, .65			
Lindsay, Texas		.95				.55
Mankato, Minn.			Pit run gravel, .50			
Moline, Ill.	.60	.60	Concrete gravel, 50% G., 50% S., 1.00			
St. Louis, Mo.						1.55
Summit Grove, Ind.	.50	.50	.50	.50	.50	.50
Waukesha, Wis.	.60	.60	.60	.60	.60	.60
Winona, Minn.			Gravel, .60 a ton			
York, Pa.		.95@1.20	(crushed rock)			
Zanesville, Ohio		.60	.60			

*Cubic yd.; † pit run; §⅝ inch and less; ‖2½ inches and less; ‡crushed rock.

Crushed Slag

City or shipping point	Roofing	¼ in. down	½ in. and less	¾ in. and less	1½ in. and less	2½ in. and less	3 in. and larger
EASTERN:							
Buffalo, N. Y.	2.35	1.25	1.25	1.25	1.25	1.25	1.25
Eastern Penn. and Northern N. J.	2.50	1.20	1.50	1.20	1.20	1.20	1.20
Western Penn.	2.50	1.25	1.50	1.25	1.25	1.25	1.25
CENTRAL:							
Ironton, O.	2.05	1.45	1.45	1.45	1.45	1.45	1.45
Jackson, O.		1.35		1.35	1.35	1.35	1.35
Youngstown, Dover, Hubbard, Leetonia, Struthers, O.	2.00	1.25	1.35	1.25	1.25	1.25	1.25
SOUTHERN:							
Alabama City, Ala.	2.05	.80	1.25	1.15	1.10	.95	.85
Ashland, Ky.		1.55	1.55	1.55	1.55	1.55	1.55
Ensley, Ala.	2.05	.80	1.25	1.15	1.10	.95	.85
Longdale, Goshen, Glen Wilton, Roanoke, Low Moor, Ruesens, Va.	2.50	1.00	1.25	1.25	1.25	1.15	1.15

Lime Products (Carload Prices Per Ton F.O.B. Shipping Point)

	Finishing hydrate	Masons' hydrate	Agricultural hydrate	Chemical hydrate	Ground burnt lime, Blk.	Ground burnt lime, Bags	Lump lime, Blk.	Lump lime, Bbl.
EASTERN:								
Adams, Mass.			7.00				2.90	
Belletonte, Pa.		10.50*	10.50*	10.50*	9.00		8.50	1.80
Buffalo, N. Y.		11.00		12.00			10.00	
Berkeley, R. I.			12.00					2.30
Lime Ridge, Pa.							5.00a	
West Stockbridge, Mass.								2.25
Williamsport, Pa.			10.00				6.00	
York, Pa. (dealers' prices)		10.50	10.50	11.50			8.50	1.65b
CENTRAL:								
Cold Springs, Ohio	12.50	11.00	10.00		9.00	11.00‖	10.00	
Delaware, Ohio	12.50	10.00	9.00	11.00			9.00	1.60
Gibsonburg, Ohio	12.50	11.00	10.00		9.00	11.00	10.00	
Huntington, Ind.	12.50	11.00	10.00				10.00	1.60c
Luckey, Ohio	12.50‡	11.00	9.00‡				10.00	1.60
Marblehead, Ohio		11.00	10.00				10.00	1.60d
Marion, Ohio		11.00	10.00				10.00	1.80†
Sheboygan, Wis.							10.00	
Tiffin, Ohio					9.00			
White Rock, Ohio	12.50				9.00	11.00		
Woodville, O. (dlrs.' price)	12.50‡	11.00‡	10.00‡		9.00	10.50	10.00	1.60
SOUTHERN:								
Erin, Tenn.							7.50	1.35
El Paso, Texas							9.00	1.50
Karo, Va.							7.00	1.50
Knoxville, Tenn.	12.50	11.00	11.00	11.00	8.50		8.50	1.50
Ocala and Zuber, Fla.	13.00		9.00		11.00		10.00	1.70
Sherwood, Tenn.	12.50	11.00	11.00	11.00			8.50	1.50
Staunton, Va.					4.50		8.50	1.35
WESTERN:								
Colton, Calif.			15.00				19.70	
Kirtland, N. M.							12.50	15.00
San Francisco, Calif.	22.00	22.00		22.00				2.50
Tehachapi, Calif.							13.00	2.10e

*Paper sacks; †180-lb. net, non-returnable metal barrel; ‡50-lb. paper bags, terms 30 days net, 25c per ton or 5c per bbl. discount for cash in 10 days from date of invoice; ‖ 80-lb. paper bags; (a) F. O. B. kilns; (b) 200 lbs. net; 2.65, 300 lbs. net; (c) wooden bbls.; (d) wooden, 1.60, steel, 180; e, wooden bbls., steel bbls., 2.20.

Miscellaneous Sands

(Continued from preceding page)

Columbus, Ohio—Core	.50@	2.00
Furnace lining	2.00@	2.50
Molding fine and coarse	1.50@	2.50
Sand blast	3.50@	5.50
Stone sawing	1.50@	1.75
Traction	.50@	1.50
Brass molding	2.00@	3.00
Delaware, N. J.—Molding fine		2.00
Molding coarse		1.90
Brass molding		2.15
Dunbar, Pa.—Traction		2.50
Dundee, Ohio.—Glass, core, sand blast traction		2.50
Molding fine, brass molding (plus 75c for winter loading)		2.00
Molding coarse (plus 75c for winter loading)		1.75
Eau Claire, Wis.—Sand blast		3.25
Traction	.50@	.85
Falls Creek, Pa.—Molding, fine and coarse		1.75
Sand blast		2.00
Traction		1.75
Franklin, Pa.—Core		2.00
Furnace lining		2.50
Molding coarse		2.00
Brass molding		2.75
Joliet, Ill.—No. 2 molding sand and loam for luting purposes; milled		.80
Bank run		.65
Kansas City, Mo.—Missouri river core		.80
Kasota, Minn.—Sand blast, stone sawing		1.50
Klondike, Pacific, Gray Summit, Mo.—Molding fine and coarse, stone sawing, roofing sand		2.00
Mapleton Depot, Pa.—Molding fine	2.00@	2.50
Traction	2.00@	2.25
Massillon, Ohio—Molding fine, coarse, furnace lining and core		3.00
Traction		2.75
Michigan City, Ind.—Core	.50@	.55
Traction		.40
Millville, N. J. Core		2.00
Mineral Ridge, Ohio—Furnace lining, molding fine and coarse, roofing sand, sand blast, stone sawing, core, traction (green)		2.00
Montoursville, Pa.—Core	1.50@	1.75
Molding fine and coarse		2.00
Traction		1.25
Brass molding		2.50
New Lexington, Ohio—Molding fine		2.75
Molding coarse		2.50
Ottawa, Ill.—Molding, coarse (crude)	1.00@	1.25
Ottawa, Minn.—Crude silica sand	.75@	1.00
Ridgway, Pa.—Core		2.00
Furnace lining, molding fine, molding coarse		1.25
Traction		2.25
Rockwood, Mich.—Roofing sand		3.00
Sand blast		3.75
Round Top, Md.—Roofing sand		2.25
Traction		1.75
Core		1.60

Miscellaneous Sands

(Continued)

San Francisco, Calif. (washed and dried)—Core, molding fine, roofing sand and brass molding	3.00@	3.50
(Direct from pit)		
Furnace lining, molding coarse, sand blast		3.60
Stone sawing, traction		2.30
St. Louis, Mo.—Red heavy molding	1.50@	2.25
Red fine	1.50@	2.00
Molding fine and brass	2.00@	3.00
Skein core	1.75@	2.25
White core sand	1.00@	1.75
Sand blast	2.00@	4.50
Furnace lining	1.50@	2.50
Roofing sand	1.00@	1.50
Stone sawing	1.25@	2.00
Tamalco, Ill.—Molding coarse	1.40@	1.60
Thayers, Pa.—Core		2.00
Furnace lining		1.25
Molding fine and coarse		1.25
Traction		2.25
Utica, Ill.—Core (crude and dry)	.85@	1.50
Furnace lining, molding fine and coarse (crude and dry), brass molding	.85@	1.50
Roofing sand, stone sawing	1.25@	2.50
Sand blast		2.50
Traction		1.25
Warwick, Ohio—Core, green, 2:00; dry		2.50
Molding fine, molding coarse, green, 2.00; dry		2.50
Traction		2.50
Zanesville, Ohio—Molding fine	2.00@	2.50
Brass molding	2.00@	3.00
Core, molding coarse	2.25@	2.50
Furnace lining, molding steel		2.00
Traction		2.50

Talc

Prices given are per ton f.o.b. (in carload lots only), producing plant, or nearest shipping point.

Asheville, N. C.—Best white and 200-mesh (per ton)		8.00
Yellow (per ton)		9.00
Red (per ton)		13.00
Baltimore, Md.—Crude talc (mine run)	3.00@	4.00
Ground talc (20-50 mesh), bags		10.00
Cubes		55.00
Blanks (per lb.)		.08
Pencils and steel workers' crayons, per gross		1.25
Chatsworth, Ga.—Crude talc (grindings)		6.00
Ground talc (150-200 mesh), bulk		15.00
Pencils and steel workers' crayons, per gross	1.50@	2.50
Chester, Vt.—Ground talc (150-200 mesh), bulk	8.00@	9.00
Including bags	9.00@	10.00
Emeryville, N. Y.—(325 mesh), bags		14.75
Hailesboro, N. Y.—Ground talc (150-250 mesh), bags		18.00
Henry, Va.—Crude talc (lump mine run) per 2000-lb. ton	3.00@	3.50
Ground (150-200 mesh), bags	8.75@	16.00
Keeler, Calif. (200 mesh)	15.00@	20.00
(300 mesh)	20.00@	30.00
(Bags extra)		
Los Angeles, Calif.—Crude	15.00@	22.00
Marshall, N. C.—Crude talc, bags		4.50
Ground (20-60 mesh)		6.50
Ground talc (150-200 mesh); bags	8.00@	12.00
Natural Bridge, N. Y.—Ground talc (300-325 mesh), 200 lb. bags	13.00@	15.00
Rochester and East Granville, Vt.—Ground talc (20-50 mesh), bulk	8.50@	10.00
Ground talc (150-200 mesh), bulk	10.00@	22.00
Vermont—Ground talc (20-50 mesh); bags	7.50@	8.50
Ground talc (150-200 mesh); bags	10.00@	16.00
Waterbury, Vt.—Ground talc (20-50 mesh), bulk	7.50@	10.00
(Bags extra)		
Ground talc (150-200 mesh), bulk	10.00@	22.50
(Bags extra)		
Pencils and steel workers' crayons, per gross	1.20@	2.50

Rock Phosphate

(Raw Rock)

Per 2240-lb. Ton

Centerville, Tenn.—B.P.L. 65%, bags		8.50
Bulk		6.50
Gordonsburg, Tenn.—B.P.L. 68-72%	5.50@	6.00
Mt. Pleasant, Tenn.—Analysis, 65% B.P.L. (2000 lb.)		6.50
Tennessee—F. O. B. mines, gross ton, unground Tenn. brown rock, 72% min. B.P.L.		5.50
Paris, Idaho.—2000 lb. mine run, B.P.L. 75%	4.50@	5.00
Ottawa, Minn.—All crude silica sand	.75@	1.00

(Continued on next page)

Roofing Slate

The following prices are per square (100 sq. ft.) for Pennsylvania Blue-Clay Roofing Slate, f. o. b. cars quarries:

Sizes	Genuine Bangor, Washington Big Bed, Franklin Big Bed	Genuine Albion	Slatington Small Bed	Genuine Bangor Ribbon
24x12	$10.20	$10.00	$8.10	$7.80
24x14	10.20	10.00	8.10	7.80
22x12	10.80	10.00	8.40	8.75
22x11	10.80	10.50	8.40	8.75
20x12	12.60	10.50	8.70	8.75
20x10	12.60	11.00	8.70	8.75
18x10	12.60	11.00	8.70	8.75
18x 9	12.60	11.00	8.70	8.75
16x10	12.60	11.00	8.40	8.75
16x 9	12.60	11.00	8.40	8.75
16x 8	12.60	11.00	8.40	8.75
18x12	12.60	11.00	8.70	8.75
16x12	12.60	11.00	8.40	8.75
14x10	11.10	11.00	8.10	7.80
14x 8	11.10	10.50	8.10	7.80
14x 7 to 12x6	9.30	10.50	7.50	7.80
	Mediums	Mediums	Mediums	Mediums
24x12	$ 8.10	$8.10	$7.20	$5.75
22x11	8.40	8.40	7.50	5.75
Other sizes	8.70	8.70	7.80	5.75

For less than carload lots of 20 squares or under, 10% additional charge will be made.

(Continued from preceding page)

(Ground Rock)

Wales, Tenn.—B.P.L. 70%	7.75
Per 2000-lb. ton	
Barton, Fla.—Analysis, 50-65% B.P.L.	3.50@ 8.00
Centerville, Tenn.—B.P.L., 65%	6.50*
Mt. Pleasant, Tenn.—B.P.L. 65%	6.50
Twomey, Tenn.—B.P.L. 65%	6.00@ 6.50

*Less $1.00 per ton dealer commission.

Florida Soft Phosphate

(Raw Land Pebble)

	Per Ton
Florida—F. O. B. mines, gross ton, 68/66% B.P.L.	2.50
70% min. B.P.L.	2.75
72% min. B.P.L.	3.00
75/74%	4.00
77/76%	5.00
Jacksonville (Fla.) District	10.00@12.00

(Ground Land Pebble)

	Per Ton
Jacksonville, Fla., District	14.00
Add 2.50 for sacks.	
Morristown, Fla.—26% phos. acid	16.00
Mt. Pleasant, Tenn.—65% B.P.L.	5.75

Fluorspar

Fluorspar—80% and over calcium fluoride, not over 5% silica; per ton f.o.b. Illinois and Kentucky mines	22.00
Fluorspar—85% and over calcium fluoride, not over 5% silica; per ton f.o.b. Illinois and Kentucky mines	23.50

Special Aggregates

Prices are per ton f. o. b. quarry or nearest shipping point.

City or shipping point	Terrazzo	Stucco chips
Barton, Wis., f.o.b. cars		10.50
Chicago, Ill.—Stucco chips, in sacks f.o.b. quarries		17.50
Deerfield, Md. — Green; bulk	7.00	7.00
Easton, Pa.—Slate granules		6.50
Granville, N. Y.—Red slate granules		7.50
Harrisonburg, Va.—Blk. marble (crushed, in bags)	14.50	14.50
Ingomar, Ohio (in bags)		6.50@20.00
Mertztown, Pa. (granite) bags, $10.00; bulk		8.00
Milwaukee, Wis. (del.)		13.50
Newark, N. J.—Roofing granules		7.50
New York, N. Y.—Red and yellow Verona		32.00
Middlebrook, Mo.—Red		25.00@30.00
Phillipsburg, N. J.—Evergreen, bulk	8.00@10.00	8.00@10.00
Creme and royal, bulk	15.00@20.00	15.00@20.00
Poultney, Vt.—Slate granules		7.50
Red Granite, Wis.		7.50
Sioux Falls, S. D.	7.50	7.50
Tuckahoe, N. Y.—(2000 lb.)		6.00@12.00
Whitestone, Ga.—White marble chips, net ton in bulk, f.o.b. cars, granite	4.50@ 6.00	4.50@ 6.00

Concrete Brick

Prices given per 1000 brick, f.o.b. plant or nearest shipping point.

	Common	Face
Carpenterville, N. J.	19.00	31.50@45.00
Ensley, Ala. ("Slagtex")	16.00	26.00
Eugene, Ore.	25.00	35.00@70.00
Friesland, Wis.	21.00	32.00
Omaha, Neb.	18.00	30.00
Portland, Ore. (Del'd)	21.00	45.00@55.00
Puyallup, Wash.	20.00	30.00@75.00
Rapid City, S. D.	18.00	22.50@40.00
St. Paul, Minn.	15.00	30.00@45.00
Watertown, N. Y.	18.00@21.00	32.00@35.00
Wauwatosa, Wis.	15.00@16.00	28.00@75.00
Winnipeg, Can.	18.00	26.00

Sand-Lime Brick

Prices given per 1,000 brick f. o. b. plant or nearest shipping point, unless otherwise noted.

Barton, Wis.	10.50
Boston, Mass.	15.00@16.00
Dayton, Ohio	13.50
Grand Rapids, Mich.	11.00
Lancaster, N. Y.	14.00
Michigan City, Ind.	11.00
Milwaukee, Wis. (delivered)	14.00
Portage, Wis.	15.00
Saginaw, Mich.	12.00
Syracuse, N. Y. (delivered at job)	20.00
F.o.b. cars	15.00@16.00

Gray Klinker Brick

El Paso, Texas	13.00

Lime

Warehouse prices, carload lots at principal cities.

	Hydrate per Ton Finishing	Common
Atlanta, Ga.	23.00	14.00
Baltimore, Md.	24.25	17.85
Cincinnati, Ohio	16.80	14.30
Chicago, Ill.	20.00	20.00
Dallas, Tex.	20.00	.....
Denver, Colo.	24.00	.....
Detroit, Mich.	20.00	19.00
Minneapolis, Minn. (white)	25.50	21.00
Montreal, Que.	.....	21.00
New York, N. Y.	18.20	13.10
St. Louis, Mo.	24.00	20.00
San Francisco, Calif.	22.00	.....
Seattle, Wash. (paper sacks)	24.00	.....

Portland Cement

Prices per bbl. and per bag net in carload lots.

	Per Bag	Per Bbl.
Atlanta, Ga.	.....	2.60
Boston, Mass.	.....	2.53@2.63
Buffalo, N. Y.	.....	2.38@2.48
Cedar Rapids, Iowa	.60	2.38@2.48
Cincinnati, Ohio	.60¼	2.41@2.54
Cleveland, Ohio	.60¼	2.41
Chicago, Ill.	.55	2.10
Columbus, Ohio	.....	2.44
Dallas, Texas	.53¾	2.15
Davenport, Iowa	.57¼	2.29
Dayton, Ohio	.....	2.38
Denver, Colo.	.....	2.84
Detroit, Mich.	.59¼	2.37
Duluth, Minn.	.54¾	2.25
Indianapolis, Ind.	.57¾	2.31
Kansas City, Mo.	.66¾	2.37
Los Angeles, Cal. (less 5c dis.)	.77	3.08
Memphis, Tenn.	.....	2.60
Milwaukee, Wis.	.58¾	2.25
Minneapolis, Minn.	.61	2.44
Montreal, Canada (sks. 20c ext.)	.....	2.25
New Orleans, La.	.....	2.90
New York, N. Y.	.....	2.15
Philadelphia, Pa.	.....	2.31
Phoenix, Ariz.	.....	3.30
Pittsburgh, Pa.	.54¾	2.19
Portland, Ore.	.....	3.05
San Francisco, Cal.	.....	2.61
St. Louis, Mo.	.55	2.20
St. Paul, Minn.	.61	2.44
Seattle, Wash. (10c bbl. dis.)	.....	2.90
Toledo, Ohio	.59½	2.38

NOTE—Add 40c per bbl. for bags.

Mill prices f. o. b. in Carload Lots to Contractors

	Per Bag	Per Bbl.
Buffington, Ind.	.46¼	1.95
Cincinnati, Ohio	.....	3.00†
Concrete, Wash.	.....	2.60
Dallas, Texas	.....	2.15
Dayton, Ohio	.....	2.85†
El Paso, Tex.	.....	3.20*
Hannibal, Mo.	.....	1.95
Hudson, N. Y.	.....	2.05
Indianapolis, Ind.	.....	2.96†
Leeds, Ala.	.....	1.95
Los Angeles, Calif.	.....	2.65
Louisville, Ky.	.....	2.37
Memphis, Tenn.	.....	3.24†
Northampton, Pa.	.....	1.95
Phoenix, Ariz.	.....	4.30‡
Steelton, Minn.	.50	2.06
Universal, Pa.	.48¾	2.00

*Gross. 10c sacks and 10c per bbl. disc 10 days.
†Including cloth sacks.
‡Gross, 15c sacks and 5c per bbl. disc. 10 days

Gypsum Products—CARLOAD PRICES PER TON AND PER M SQUARE FEET, F. O. B. MILL

	Crushed Rock	Ground Gypsum	Agricultural Gypsum	Stucco* Calcined Gypsum	Cement‡ and Gauging Plaster	Wood Fiber	White§ Gauging	Sanded Plaster	Keene's Cement	Trowel Finish	Plaster Board ½x32x36" Weight 1500 lb. Per M Sq. Ft.	Plaster Board ⅜x32x36" Weight 1850 lb. Per M Sq. Ft.	Wallboard ⅜x32 or 48" Lengths 6'-10', 1850 lb. Per M Sq. Ft.
Douglas, Ariz.	.....	6.00	6.00	.....	13.00	.....	.....	.....	.....	.....	.....	.....	.....
Fort Dodge, Iowa	3.00	3.50	6.00	8.00	10.00	10.50	20.00	.....	21.30	20.00	20.00	.....	30.00
Garbutt, N. Y.	.....	.....	6.00	8.00	10.00	10.00	.....	7.00	.....	.....	.....	20.00	.....
Grand Rapids, Mich.	3.00	.....	5.00	10.00	10.00	10.00	.....	.....	31.00	.....	19.75	20.00	30.00
Hanover, Mont.	4.50	.....	6.00	10.00	.....	10.50	.....	.....	.....	.....	.....	.....	.....
Mound House, Nev.	.....	8.50	6.50	10.50@11.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oakfield, N. Y.	3.00	4.00	6.00	8.00	10.00	10.00	20.20	7.00+	30.75	21.00	19.375	20.00	30.00
Rapid City, S. D.	4.00	.....	.....	10.00	11.00	11.50	.....	.....	33.75	.....	.....	.....	.....
San Francisco, Calif.	.....	.....	.....	16.40	.....	.....	.....	.....	.....	.....	.....	.....	.....
Winnipeg, Man.	5.50	5.50	7.00	13.50	15.00	15.00	.....	.....	.....	.....	28.50	.....	35.00

NOTE—Returnable Bags, 10c each; Paper Bags, $1.50 per ton extra (not returnable).
*Shipment in bulk 25c per ton less; ‡Bond plaster $1.50 per ton additional; +Sanded Wood Fiber $2.50 per ton additional; §White Moulding 50c per ton

News of All the Industry

Incorporations

Hydro Block Corp., 812 Wilson avenue, Toledo, Ohio, has been incorporated for $25,000 to manufacture and sell building material, fireproof building blocks, tile, etc. Incorporators: Fred C. Anderson, F. W. Johnson, H. L. Turner. Correspondent: Eugene Huss, 77 West Washington street.

Blue Bell Lime Products Co., Philadelphia, Pa., quarry, $200,000. (Corporation Guarantee & Trust Co.)

Granite Sand and Gravel Co., Indianapolis, Ind., increased capital from $270,000 to $600,000.

Lassig Limestone Quarry Corp. of Houston, Texas, has increased its stock from $25,000 to $60,000.

Stanley Cement and Lime Co., Charleston, W. Va., has increased its capital stock from $800,000 to $1,600,000.

Central Sand, Stone and Supply Co., Johnstown, Pa., has increased its capital stock from $30,000 to $100,000.

Buttress Gypsum Tile Co., Los Angeles, Calif., has been incorporated with a capital stock of $50,000, shares 500; subscribed $300.

Watertown Stone Products Co., Watertown, N. Y., $10,000 to $50,000.

Glenwood Gravel Co., Little Rock, Ark., which will deal in crushed rock, gravel, sand and the like, has been incorporated with a capital stock of $30,000.

Christiana Sand Co., Wilmington, Del. $100,000. (Delaware Charter Co.)

Easton Stone and Supply Co., Easton, Pa., $30,000; Louis Sulkin.

Garfield Rock Asphalt Co., mining; $850,000; T. L. Croteau, Wilmington, Del.

Minnesota Rock and Gravel Co., Duluth, Minn., has been incorporated for $150,000, by E. E. Farrell, 45th and Minnesota avenue, and others.

Kasota Gravel Co., Kasota, Minn., has been incorporated for $20,000, by C. W. Babcock, T. S. Wilcox, and C. R. Swenson.

Amiesite Asphalt Co., Miami, Okla., has been incorporated for $10,000, by James F. Robinson, George W. Beck, Jr., and others.

Builders' Sand Co., Cuyahoga Heights, Ohio, has been incorporated for $10,000 by E. H. Donahue and P. J. Greeley.

Medford Cast Stone Co., Medford, Mass., Capital $50,000, incorporators, Antonio Galante, Boston; Sinibaldi Galante, Medford; Anthony F. LaTerza, Somerville.

Stockbridge Stone Co., Inc., Birmingham, Ala., general mining, $100,000. E. M. Hamill, W. Bennett, R. A. Love, Birmingham, Ala. (United States Corporation Co.)

Petroleum Sand Products Corp., New York, $2,000,000 to $2,500,000. (Increase.)

Hy-Test Cement Co., Philadelphia, Pa., Manufacture and sale of portland cement. F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Philadelphia.

Dallas Sand and Gravel Co., Dallas, Texas, capital stock, $1600. Incorporators: Y. J. Hawkins, H. A. Turner and A. Bevacqua.

Manhattan Sand Blast Corp., Wilmington, Del., $100,000. (Colonial Charter Co.)

Emmett B. Simpson, Inc., Queens, N. Y., formed to deal in sand and gravel, etc. Capital, $25,000. Directors are E. B. Simpson and C. R. Simpson, Hempstead road and Wurtland avenue, Queens, and C. A. Nagle, Hollis.

Egbert Concrete Products, Brooklyn, N. Y., $100,000; G. W. and G. W. Egbert, Jr., W. B. Cruickshank. (Attorney, G. W. Titcomb, 215 Montague street, Brooklyn.)

Marble Products Corp., Manhattan, N. Y., quarrying, mining, etc., has been incorporated for $500,000 by H. L. Gotham, 300 West 55th street, New York City.

Monolith Concrete Construction Co., Corpus Christi, Texas, has been incorporated for $12,500 by W. W. Chapman, L. B. Griffith and Carleton Griffith.

Sand and Gravel

The gravel and sand rights along the Sevenmile creek, near Collinsville, Ohio, have been leased to Crist & Beatty, contractors of that place. Work on a modern and up-to-date screening and washing plant is soon to start. Cement, tile and blocks are also to be made. The plant is to be erected at Collinsville, along the Pennsylvania railroad.

From 50 to 100 cars of sand and gravel are being shipped weekly to various points on the Texas & Pacific and Wichita Valley railways from Colorado, Texas, and yet the demand for these materials is considerably above the supply. Contractors plan enlarging facilities for taking the material from the bed of the Colorado river and loading it into freight cars for shipment.

C. W. Stevens Sand and Gravel Co., Indianapolis, Ind., has announced that preliminary estimates of the year's business show that sales of material by the company disclosed an increase of about 20 per cent over the preceding year and a gain of more than 100 per cent when compared with 1921. Sales in 1923 amounted to more than $90,000; in 1922, they were $69,000, and in 1921, $43,000. "This year's business has been the heaviest in the history of the company," Mr. Stevens said. "An active demand for sand and gravel, resulting from a large amount of street and road construction and from the building trades, was maintained throughout the entire 12 months. In the first part of the year, we devoted most of our attention to the supplying of material for street and highway work, but later in the year we sold a large amount for construction work."

Ludwig Sand and Gravel Co., and **Otto Ludwig Block Co.**, Milwaukee, Wis., announce the removal of their office to their concrete block plant. The new address is R. R. 6, Station C, Box 49 A.

Adam Nickle has purchased the gravel pit and plant owned by R. P. Sebold, civil engineer of Dayton, Ohio, and will continue to operate the screens to supply sand and gravel. The price paid was $10,000.

Good Roads Gravel Co., recently incorporated in Montgomery, Ala., has organized, with W. B. Moberly as president, and is operating a sand, clay, gravel pit nine miles west of Montgomery, with an output of 100 cars per day.

Salado Gravel Co., Inc., San Antonio, Texas, is about to begin the construction of its plant about seven miles north of San Antonio. Machinery will include power plant, pumping plant, washer, crusher, etc.

Koch Sand and Gravel Co., Evansville, Ind., recently organized with a capital stock of $100,000, will begin full operations in March, when the building of equipment consisting of diggers, barges and derricks is finished. Controlling stock of the Koch Sand and Gravel Co. is owned by Henry Koch of the George L. Mesker Co.

J. F. McIntyre and Son, Inc., have made their first gravel delivery from the plant which has just begun operations at Redway, Ark., on the Saline river about midway between Rison and Kingsland.

Nodaway county, Mo., is undergoing gravel inspection as part of a state-wide campaign of the Highway Commission to locate highway construction materials in the state for quantity and quality of material for road work. This does not mean that the primary road between Maryville and St. Joseph will be built of gravel, it is said, as this gravel may be shipped to parts where this material is not available for road work.

T. H. and R. N. Reynolds, Camden, Ark., expect to install a plant on the Kent Pike for taking gravel from the bed of the Ouachita river. It is reported that the plant will have an output of 200 cu. yd. of washed and screened gravel.

Ideal Sand and Gravel Co. of Mason City, Iowa, has been reorganized but under the same name. Grant McGowan of Mason City has purchased the interest of F. A. Stephenson and the new officers of the company are: Grant McGowan, president; W. A. McGowan, vice-president; M. B. McGowan, secretary-treasurer, and C. E. Thomas, general manager. C. B. McGowan is manager of sales and traffic. Mr. Thomas has been with the company for eight years past.

Union Rock Co. of Los Angeles, Calif., the largest concern of its kind on the Pacific coast, reports shipment of crushed rock amounting to approximately 3,000,000 tons annually, a very pronounced increase over the previous year. This concern has several plants, and is now completing plans for a new plant that will represent an outlay of $300,000.

Coast Rock Co., a San Francisco concern, has recently purchased 160 acres and is preparing to build a plant that will cost $1,000,000 near Los Angeles.

Quarries

Southern Pacific rock quarry at Santa Margarita, Calif., is reported to be installing one of the largest rock crushers on the coast.

Belvoir Stone and Supply Co., Cleveland, Ohio, recently purchased a 20-acre tract on Nine-Mile creek valley, west of Green Road in South Euclid. This tract is underlaid with stone which will be crushed for use in buildings and on roads. The company will provide a building supply headquarters for that territory.

Carthage, Mo.—Quarry and strip gang men at the F. W. Steadley & Co. and at the Consolidated Marble and White Lime Co. plants went on strike recently, following a cut in wages of 50 cents per day for each class of labor.

Gallatin, Mo.—A newspaper report states that Gallatin is to be one of two towns that will furnish 675,000 yd. of crushed rock for the state highways of northwest Missouri. The resumption of the rock crushing industry here which has been at a practical standstill for six or seven years will mean a great deal to Gallatin in a financial way, it is stated.

Plymouth, Ill.—A 100-acre tract of land near here has been leased to a company composed of Chicago, Galesburg and Macomb men, who will open a stone quarry.

Webb City Stone Co., Webb City, Mo., has recently taken over the operations of the Ada-Ment Gravel Co. .In addition to the present plants operated by this company, they have contracted for more tracks and loading plants to take care of the rapidly increasing demand for Webb City chats, crushed stone and sand.

Thompson Paint and Color Co., Kansas City, Kans., has considerable holdings in Baxter county, Kans. The concern will start soon to open a large quarry of stone near Cartney, with which it will make paint. It is just completing a crushing and pulverizing plant at Summit, in Marion county, where the stone will be reduced to powder from which the paint will be made and the colors extracted.

Oak Hall Limestone Co., Bellefonte, Pa., recently received an order for 80,000 tons of limestone. This order in addition to the smaller local orders will make the quarry a busy place for at least a year.

Wagner Quarries Co., Sandusky, Ohio, will erect and operate a stone crusher with a capacity of 60 carloads of crushed stone daily at its quarry near the Ohio Soldiers and Sailors Home, three miles south of here.

Southern Illinois Quarry and Construction Co., of Murphysboro, Ill., has secured paving contracts for paving amounting to $97,231, according to newspaper reports.

Midwest Crushed Stone Quarries Co., Greencastle, Ind., was recently destroyed by fire, the loss being estimated at about $50,000. The plant was one of the largest stone crushing concerns in the Middle West. Main offices are in Indianapolis.

Martex Products Corp., Baltimore, Md., of which Raymond L. Lovell, Texas, Md., is president, will establish a plant for quarrying and crushing marble.

Sandstone Quarries Co., producer of Kettle River sandstone, Sandstone, Minn., proposes to continue operating the quarry through this winter.

Consolidated Stone and Mining Co. stockholders elected the following directors at their annual meeting: George D. Blair, George W. Lamoree, George L. Patterson, H. M. Wirsing, J. V. Cunningham, A. H. Seigle and Paul A. McBride. The directors elected the following officers: President, J. V. Cunningham; vice-president and treasurer, George W. Lamoree; secretary, Frank S. Hoyt. The plant of the company is located between Wampum and Ellwood City and manufactures crushed stone and lime, being one of the largest plants manufacturing crushed stone for commercial purposes in western Pennsylvania.

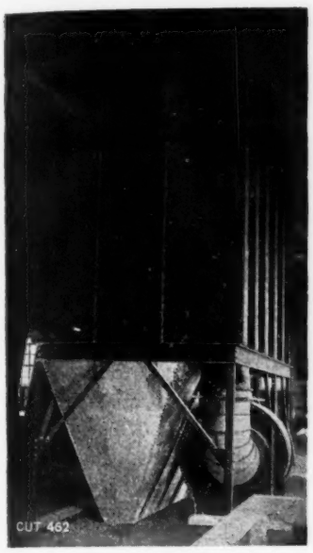
"Sly Makes Perfection of Dust Collection"

From Coast to Coast

you'll find

SLY DUST ARRESTERS

At Rockland, Maine



Sly Dust Arrester connected to Raymond Mills, Crushers and Bagging Machines in the Hydrated Lime Mill of the Rockland and Rockport Lime Company

Everywhere

in the rock products and allied industries Sly Arresters are eliminating dust nuisances, protecting men and machinery, increasing efficiency, and collecting valuable fine material.

At Corona, California

Sly Dust Arrester on the side of a hill at the rock crushing plant of the Blue Diamond Materials Co. Dust is bagged directly from Arrester hoppers

You know these firms, who are satisfied users of Sly Dust Arresters

Lime and Plaster Plants

Rockland and Rockport Lime Co., Rockland, Me.
Blue Diamond Materials Co., Corona, Cal.
New England Lime Co., North Adams, Mass.
Sand-Lime Products Co., Detroit, Mich.

Stone, Sand and Gravel Plants

E. H. Bradbury Co., Kansas City, Mo.
Blue Mountain Stone Co., Delta, Pa.
Buffalo Crushed Stone Co., Buffalo, N. Y.
Summit Silica Co., Barberton, Ohio

Brick and Clay Plants

Kier Fire Brick Co., Salina, Pa.
Harbison-Walker Refractories Co., Templeton, Pa.
Ohio Insulator Co., Barberton, Ohio
Findlay Clay Pot Co., Washington, Pa.

Cement Plants

Lehigh Portland Cement Co., Ormrod, Pa.
New Castle Pa., Fordwick, Va.
Mitchell, Ind., Mason City, Iowa.
Birmingham, Ala.
Marquette Cement Mfg. Co., La Salle, Ill.
Dexter Portland Cement Co., Nazareth, Pa.
Universal Portland Cement Co., Buffington, Ind.
Whitehall Cement Co., Philadelphia, Pa.
Hawkeye Portland Cement Co., Des Moines, Iowa
Colorado Portland Cement Co., Portland, Colo.
United States Portland Cement Co., Concrete, Colo.
Oklahoma Portland Cement Co., Ada, Okla.

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THE W. W. SLY MFG. CO.

CLEVELAND, OHIO

OFFICES IN ALL PRINCIPAL CITIES

BY AND BY—YOU'LL BUY FROM SLY

The American Crushed Rock Co. at its plant near Pomona, Calif., is constructing a half-mile embankment across part of the wash to hold the flood waters of the San Antonio creek in the stream channel. The building of the rock dike will do much toward abating the devastating floods which in seasons past have washed over acres of orange groves and cut through ranches and country roads south and east of here, when the waters of the San Antonio were on rampage.

Cement

Texas Portland Cement Co., Houston, Texas, will make three additions to its plant at an estimated cost of $15,000, according to an application for building permits filed at Houston recently.

Atlas Portland Cement Co. will build three factories in the South for making cement bags, it is announced. One of these will be at Leeds, Ala.

Dewey Portland Cement Co., of Kansas City, Mo., has elected the following: F. E. Tyler, president and general manager, re-elected; H. F. Tyler of Dewey, Okla., first vice-president in charge of production; A. L. Frank, vice-president in charge of sales; R. W. Moore, secretary, and W. E. Tyler, treasurer, re-elected.

Fredonia Portland Cement Co. installed a $110,000 Diesel engine at its plant at Fredonia, Kans., during the past year.

Dewey Portland Cement Co., Dewey, Okla., are preparing to pay bonuses to 289 employes who have been in the employ of the company for a year or more. Those who have served the company one year and less than two will be paid 3 per cent of their total wages, two-year employes 4 per cent, three-year employes 5 per cent, four-year 6 per cent, and five-years and over 7 per cent.

Trinity Portland Cement Co. has given $50 to the firemen's pension fund and $10 to each of the 10 firemen who helped in combating the flames at the fire which recently damaged its Texas plant.

Portland Cement Association officers from the general offices in Chicago and representatives of the Atlanta, Birmingham, Jacksonville, Memphis and New Orleans districts were in convention at Atlanta, Ga., last week.

Choctaw Portland Cement Co. property is to be offered for sale in bankruptcy on February 19 at McAlester, Okla., according to advertisements in several Oklahoma newspapers.

Lime

Scioto Township Limestone Co., Inc., held its first stockholders' meeting a short time ago in the Grange Hall at Cove, Ohio, for the purpose of completing the organization of the company. County Agent L. A. Kauffman was present to help the good work along. The company is capitalized at $10,000 and will erect and operate a lime storage bin at Cove. The bin will be of 100 tons capacity and will enable the farmers who are within hauling distance of Cove to secure agricultural lime whenever needed in the quantities desired. It is predicted that having lime accessible at all times will greatly increase its use on the sour soils of Scioto and adjoining townships.

Red clay, analyzing from 25 to 78 per cent lime, has been found in Adams county, Wis., and is being recommended by County Agent E. V. Ryall for putting on the land to grow alfalfa.

The Bank of Erin, Erin, Tenn., has purchased the Arlington Lime Works in Houston county, under court decree.

A. C. Blowers, Ocala, Fla., will rebuild lime and phosphate plant, burned at loss of $30,000.

Iowa County, Wisconsin—Farmers and their county agricultural extension agent have worked out a plan enabling them to increase the amount used more than 24 times. Limestone exists on almost every farm in the county. This is now being pulverized on the farms by portable lime crushers, privately owned, which go from farm to farm for this purpose, saving the cost of freight, hauling and rehandling. In 1921, at meetings to discuss the value of lime in growing legumes, farmers guaranteed to order 1200 tons, which was sufficient to warrant the purchase of one portable crusher. Over 2300 tons were used that year and sufficient orders guaranteed to secure the purchase of a second crusher. Last year, according to reports to the United States Department of Agriculture, over 5000 tons of lime were used, 4800 tons more than the largest amount used before portable crushers were brought into the county.

Concrete Products

Houghton Cement Block Co., Columbus, Ohio, is almost completed, it is reported, and is estimated to have a capacity for 1,000,000 concrete blocks a year. It is also stated that probably another branch plant will be established at Zanesville, Ohio shortly.

Riverside Cement and Roofing Co., San Jacinto, Calif., will start work this month on new roofing manufacturing plant, to be erected on the Relief Hot Springs Road, near the Jack Rabbit Trail, and will manufacture a fireproof roofing material in which concrete is used. About 200 men will be employed.

Dallas, Texas.—Texas members of the Common Brick Manufacturers' Association of America in conjunction with the national organization is reported to be undertaking a general publicity campaign in Texas and the Southwest to educate the public in the use of common brick in home building as well as for other purposes.

Astoria Brick and Tile Works, Astoria, Ill., was destroyed by fire recently at an estimated loss of $6000. The plant is owned by Charles Butler and Harry Brockley. The plant will probably be rebuilt, it is stated.

Frank Vivele & Co., Inc., Brooklyn, N. Y., formed to manufacture concrete blocks, etc. Capital $10,000. Directors are Frank Vivele, 2228 E. 19th street; Frank Manino, 575 20th street, and F. M. Buzzetta, 504 18th street, Brooklyn.

J. H. Anderson, Camden, S. C., will install machinery for making concrete brick and concrete novelties.

Standard Slag Co., Youngstown, Ohio, is reported to have purchased a site in the southern part of McMechen, W. Va., on which a plant will be erected for the manufacture of concrete from the slag obtained from the furnaces of the United States Steel Corp., at Benwood and Bellaire, Ohio.

Keystone Slag Co., Reading, Pa., headed by Jacob V. R. Hunter, has preliminary plans for rebuilding the portion of its slag roofing plant, with power house, recently destroyed by fire with loss estimated at $100,000.

Silica Sand

Wedron Silica Co. has bought property at Brighton, Ill., which it will develop and on which additional switch track facilities will be installed.

National Silica Manufacturing Co. during the past year had a building remodeled and dryer and crusher installed at a cost of $30,000 at its plant at Meade, Kans.

Rock Asphalt

Vernon county, Mo., rock asphalt is to be tested by Topeka, Kan., as paving material. Mayor Cecil Thomas has given permission to have a block here paved with the Missouri-mined product, under the supervision of the highway department. This will be the first Missouri rock asphalt used. Rock asphalt deposits have been found in Vernon county north of Nevada; in Bates county, east and west of Butler; also in Barton county and in northern Carroll county.

Gypsum

Pacific Coast Gypsum Co., Gypsum, Alaska, closed down its plant some time ago and will remove the machinery to prospects it owns either near Ketchikan or Wrangell.

American Gypsum Co. has completed a new $40,000 office building at Port Clinton, Ohio.

Mammoth Plaster Co., Cedar City, Utah, has been awarded the contract to supply 400 tons of raw gypsum daily to the Blue Diamond Materials Co., of Los Angeles, Calif.

Magnesite

Northwest Magnesite Co., Chewelah, Wash., will take over all the property of the American Mineral Production Co. at Valley, it is reported, for a consideration of approximately $1,000,000.

Phosphate Rock

American Sulphur and Fertilizer Co., Pecos, Texas, has leased buildings in the Love Field industrial district, Dallas, Texas, and will install machinery and equipment for ore-crushing, sorting, etc. Later the company expects to erect a new plant in this section to cost more than $100,000 with equipment. J. A. Price is president.

Personal

L. O. Vogel has been made sales manager of the Peninsular Portland Cement Co., of Cement City, Kansas. He has had practically full charge of the department for the past year and his appointment has now been made officially. Mr. Vogel has been with the Peninsular organization for the last eight years.

J. H. Wade, formerly director of the Cleveland Stone Co., Cleveland, Ohio, has resigned and is succeeded by his son, Garretson G. Wade.

Obituary

Clyde Osborn, advertising manager of the Mine and Smelter Supply Co. of Denver, died recently, and his passing will be regretted, as he was a man who had made many friends in the mining, quarrying and allied industries.

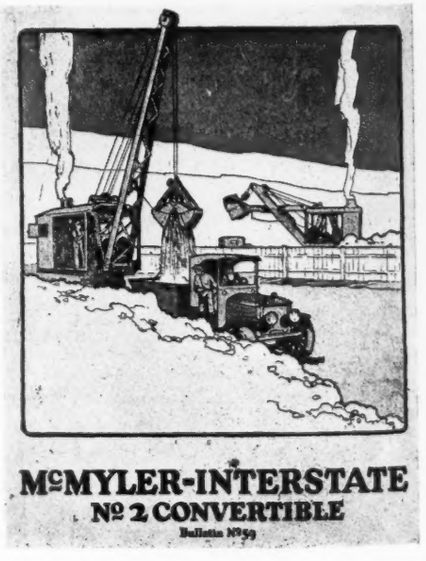
Trade Notes

Quaker City Rubber Co. now has all its departments located at Wissinoming, a part of Philadelphia. The mail address of the company is now Wissinoming, Philadelphia, Pa.

Hill Clutch Co., Cleveland, Ohio, manufacturer of power transmitting equipment, elevating, conveying and concrete machinery, has changed its name to **The Hill Clutch Machine and Foundry Co.,** which name the company believes is more comprehensive.

Trade Literature

McMyler-Interstate Co., Cleveland. Bulletin No. 59 illustrating and describing this company's No. 2 convertible hoisting mechanism. The bulletin is well illustrated with both line and halftone engravings; the cover is shown herewith.



Cover of the New McMyler-Interstate Circular

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Rock Products

Established 1902

VOLUME XVII, No. 3 CHICAGO FEBRUARY 9, 1924

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Chain and Sprockets

These two links were placed in the same line of chain at the same time and taken out and photographed at the same time. One is completely worn out; one is as good as ever.

Bulletins on Request

Tisco Manganese Steel Chain

possesses unusual wearing qualities. It will withstand abrasion, is tough and yet hard and strong. For these reasons it is admirably adapted to the rock products industry.

We manufacture detachable chains of various types as well as a large variety of standard chains. Your inquiries will receive prompt attention.

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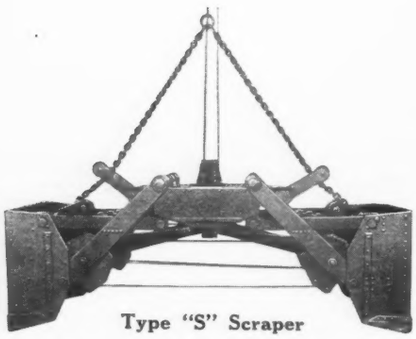
When you buy an O-S Dependable Gasoline Shovel it is a real investment. When you put your money in an O-S Dependable the money comes back in a steady flood of greater production at less operating expense.

The O-S Dependable has eliminated all ropes that stretch and break, all sprockets and chains that delay operations because of frequent adjustments.

The O-S Dependable has replaced these objectionable features by smooth running, positive and powerful gears, thus assuring continuous operation.

The O-S Dependable has an adjustable boom and Flexible Crawling Tread. It can be sent anywhere and will work under any conditions.



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